

# NINTH ANNUAL REPORT

OF THE

Corporation, Board of Managers,

OF THE

## R. I. COLLEGE OF AGRICULTURE

AND

## MECHANIC ARTS,

MADE TO THE

General Assembly, at its January Session, 1897.

PART I.

---

Part II, Experiment Station Report, is printed under separate cover.

---

PROVIDENCE, R. I.

E. L. FREEMAN & SONS, PRINTERS TO THE STATE.

1897.

## Rhode Island College of Agriculture and Mechanic Arts.

---

### CORPORATION.

HON. MELVILLE BULL.....	NEWPORT COUNTY.
HON. C. H. COGGESHALL.....	BRISTOL COUNTY.
HON. CHARLES J. GREENE.....	WASHINGTON COUNTY.
HON. HENRY L. GREENE.....	KENT COUNTY.
HON. GARDINER C. SIMS.....	PROVIDENCE COUNTY.

---

### OFFICERS OF THE CORPORATION.

HON. C. H. COGGESHALL, President.....	P. O., BRISTOL,	R. I.
HON. HENRY L. GREENE, Vice President.....	P. O., RIVERPOINT,	R. I.
HON. CHARLES J. GREENE, Clerk.....	P. O., KENYON,	R. I.
HON. MELVILLE BULL, Treasurer.....	P. O., NEWPORT,	R. I.

## REPORT.

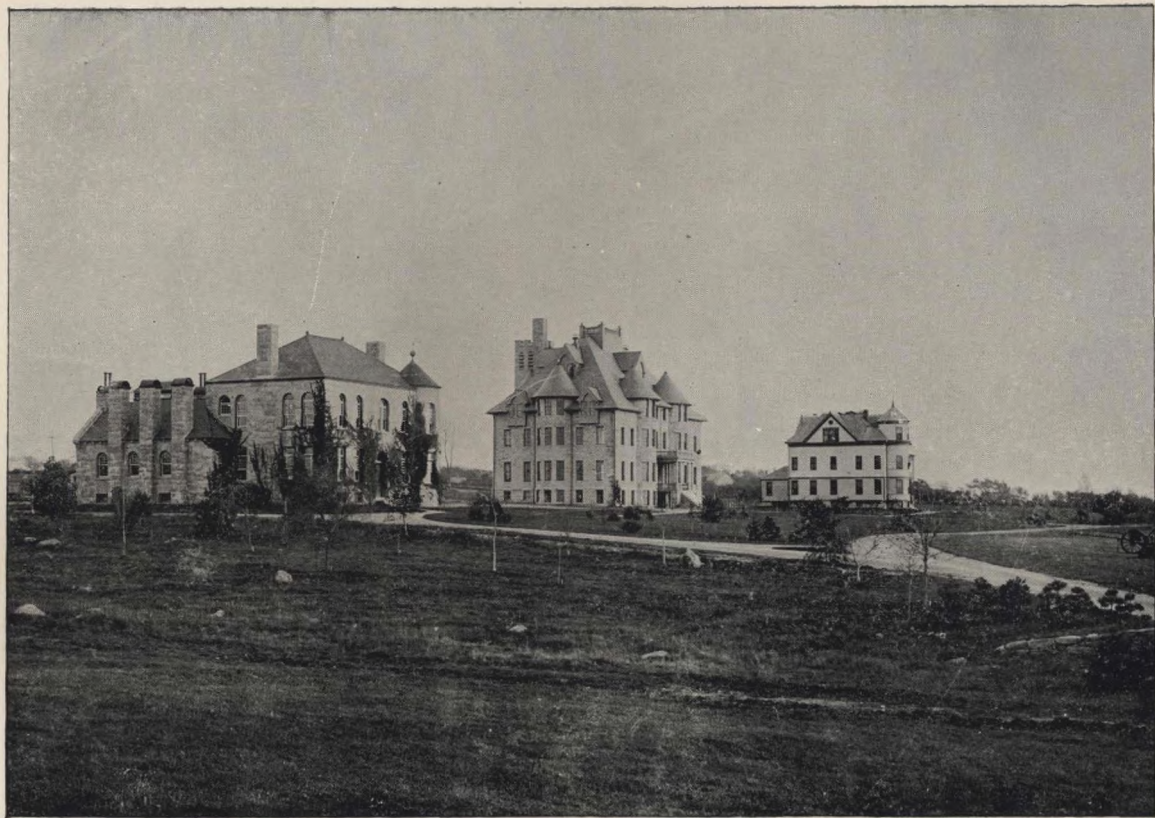
---

*To His Excellency Charles Warren Lippitt, Governor, and the  
Honorable General Assembly of the State of Rhode Island  
and Providence Plantations, at its January Session, 1897 :*

I have the honor to submit herewith the Ninth Annual Report of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, as required by law.

CHANDLER H. COGGESHALL,

*President of the Board of Managers of the Rhode Island College of Agriculture and  
Mechanic Arts.*



CHEMICAL LABORATORY.

COLLEGE HALL.

BOARDING HALL

# FACULTY.

---

JOHN HOSEA WASHBURN, PH. D.,

PRESIDENT,

*Professor of Agricultural Chemistry,*

B. S., Massachusetts Agricultural College, 1878; Graduate student, Brown University, 1880; Graduate student, Massachusetts Agricultural College, 1881-1883; Professor of Chemistry, Storrs Agricultural School, 1883-1887; Student in Göttingen University, 1885 and 1887-1889; Ph. D., Göttingen, 1889; Appointed President, 1890.

CHARLES OTIS FLAGG, B. S.,

*Emeritus Professor of Agriculture,*

B. S., Massachusetts Agricultural College, 1872; President of Board of Managers of R. I. College of Agriculture and Mechanic Arts, 1883-1894; Professor of Agriculture, 1890-1896; Director of R. I. Experiment Station since 1889.

HOMER JAY WHEELER, PH. D.,

*Professor of Geology,*

B. S., Massachusetts Agricultural College, 1883; Assistant Chemist, Massachusetts State Experiment Station, 1883-1887; Graduate student, University of Göttingen, 1887-1889; Ph. D. Göttingen, 1889; Appointed Chemist of R. I. Agricultural Experiment Station and Professor of Geology, 1890.

ANNE LUCY BOSWORTH, B. S.,

*Professor of Mathematics,*

B. S., Wellesley College, 1890; First Assistant, Amesbury (Mass.) High School, 1890-1892; Appointed Professor of Mathematics, April, 1892; Graduate student at the University of Chicago, summer of 1894 and 1896.

E. JOSEPHINE WATSON, A. M.,

*Professor of Languages,*

A. B., Smith College, 1882; A. M., The Cornell University, 1883; Assistant in English, Smith College, 1883-1887; Student of North European Languages in Göttingen, 1887-1889; Appointed Professor of Languages, September, 1892; Student of French in Tours, summer of 1895.

## WILLIAM ELISHA DRAKE, B. S.,

*Professor of Mechanical Engineering,*

B. S., Polytechnic Institute, Worcester, 1886; Instructor in Physics and Electricity, Worcester Polytechnic Institute, 1887; Instructor in Woodworking at Pratt Institute, Brooklyn, 1887-1893; Appointed Professor of Mechanical Engineering, 1893.

## OLIVER CHASE WIGGIN, M. D.,

*Professor of Comparative Anatomy and Physiology,*

M. D., Harvard University, 1866; Practicing physician in Providence, 1866-1886; Visiting physician to R. I. Hospital, 1872-1882; Consulting physician to Dexter Asylum, 1875-1885; President Providence Medical Association, 1880-1882; President Rhode Island Medical Society, 1884-1886; Founder of the Providence Lying-in Hospital, and President 1884-1891; Appointed Professor of Comparative Anatomy and Physiology, 1893.

## WILLIAM WALLACE WOTHERSPOON,

Captain, 12th Infantry, U. S. A.,

*Professor of Military Science and Tactics,*

Appointed 2nd Lieutenant, 12th Infantry, October 1, 1873; Promoted 1st Lieutenant, March 20, 1879; Promoted Captain 12th Infantry, April 28, 1893; Appointed Professor of Military Science and Tactics, November, 1894.

## HARRIET LATHROP MERROW, A. M.,

*Professor of Botany,*

B. S., Wellesley College, 1886; Teacher of Science, Plymouth (Mass.) High School, 1887-1888; Teacher of Science, Harcourt Place, Gambier, O., 1888-1891; Graduate student, University of Michigan, 1891-1892; A. M., Wellesley College, 1893; Graduate assistant, Botanical Laboratory, University of Michigan, 1893-1894; Appointed Professor of Botany, January, 1895.

## ARTHUR AMBER BRIGHAM, PH. D.,

*Professor of Agriculture,*

B. S., Massachusetts Agricultural College, 1878; Engaged in practical farming, 1878-1888; Professor of Agriculture in the Imperial Agricultural College at Sapporo, Japan, 1888-1893; Graduate student at Göttingen University, 1893-1896; Ph. D., Göttingen, 1896; Appointed Professor of Agriculture, 1896.

## GEORGE WILTON FIELD, PH. D.,

*Professor of Zoology.*

A. B., Brown University, 1887, and A. M. 1890; Ph. D., Johns Hopkins University, 1892; Assistant in Biology, Johns Hopkins University, 1891-1892; Occupant of Smithsonian Table at Naples Zoological Station, 1892-1893; Student at University of Munich, 1893; Associate Professor of Cellular Biology, Brown University, 1893-1896; Appointed Professor of Zoology, 1896.

## JAMES DE LOSS TOWAR, B. S.,

*Assistant Professor of Agriculture and in Charge of Civil Engineering.*

B. S., Michigan Agricultural College, 1885; Graduate student at Michigan Agricultural College, 1890-1891; Assistant Agriculturist, R. I. Experiment Station, 1891-1894; Appointed Assistant Professor of Agriculture, R. I. College of Agriculture and Mechanic Arts, 1893; Appointed in Charge of Civil Engineering, 1895.

## THOMAS CARROLL RODMAN,

*Instructor in Woodwork,*

Appointed, 1890.

## MARY POWELL HELME,

*Instructor in Drawing.*

Student at Friends' School, Providence, R.I., 1879-1882; Associate Instructor in Drawing and Painting, Friends' School, 1883-1891; Appointed Instructor in Drawing, 1892; Pupil of Mrs Rhoda Holmes Nichols, Augustus St. Gaudens, and William M. Chase.

## ANNA BROWN PECKHAM, A. B.,

*Instructor in Languages and History.*

A. B., Wellesley College, 1893; Instructor in Public School, Kingston, R. I., 1893-1894; Appointed Instructor in Languages and History, 1894.

## ARTHUR CURTIS SCOTT, B. S.,

*Instructor in Physics.*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Student at Harvard University, summer course in Physics, 1895; Appointed Instructor in Physics, 1895; Student at The Cornell University, summer course in Physics, 1896.

## GEORGE BURLEIGH KNIGHT,

*Instructor in Iron Work,*

Appointed, 1896.

## CHARLES SHERMAN CLARKE, B. S.,

*Assistant in Mechanics.*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Mechanics, 1895.

## JOHN FRANKLIN KNOWLES, B. S.,

*Instructor in Woodwork,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1894; Appointed Assistant in Mechanics, 1894; Appointed Instructor in Woodwork, 1896.

## LUCY HARRIET PUTNAM,

*Instructor in Expression,*

Graduate of School of Expression, Boston, Mass., 1896; Instructor at summer session of School of Expression, Plymouth, Mass., 1896; Appointed Instructor in Expression, 1896.

## CHARLES HENRY HOWARD STONE, B. S.,

*Instructor in Chemistry,*

B. S., Massachusetts Institute of Technology, 1896; Appointed Instructor in Chemistry, 1896.

## HOWLAND BURDICK, B. S.,

*Assistant in Agriculture,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Agriculture, 1896.

## JOHN EDWARD HAMMOND, B. S.,

*Assistant in Agriculture,*

B. S., R. I. College of Agriculture and Mechanic Arts, 1895; Appointed Assistant in Agriculture, 1896.

## CHARLES FRANKLIN KENYON,

*Assistant in Chemistry.*

## NATHANIEL HELME,

*Meteorologist.*



# COLLEGE CALENDAR.

1897.

## WINTER TERM.

January 4, 1.00 P. M. .... Term begins.  
January 28. .... Day of Prayer for Colleges.  
February 22. .... Washington's Birthday.  
March 26. .... Term ends.

## SPRING TERM.

April 5, 1 P. M. .... Term begins.  
..... Arbor Day.  
May 30 ..... Memorial Day.  
June 7 ..... Senior Examinations begin.  
June 13. .... Baccalaureate Sunday.  
June 15. .... Commencement.  
June 19, 10 A. M. .... Entrance Examinations.

## FALL TERM.

September 1, 10 A. M. .... Entrance Examinations.  
September 20, 10 A. M. .... Entrance Examinations.  
September 21, 1 P. M. .... Term begins.  
..... Thanksgiving Day.  
December 24. .... Term ends.

1898.

## WINTER TERM.

January 3, 1 P. M. .... Term begins.  
March 25. .... Term ends.

## SPRING TERM.

April 4. .... Term begins.  
June 12. .... Baccalaureate Sunday.  
June 14 ..... Term ends.

## EXPERIMENT STATION STAFF.

---

JOHN H. WASHBURN, Ph. D.....	PRESIDENT OF THE COLLEGE.
CHARLES O. FLAGG, B. S.....	DIRECTOR AND AGRICULTURIST.
H. J. WHEELER, Ph. D.....	CHEMIST.
L. F. KINNEY, B. S... ..	HORTICULTURIST.
GEORGE W. FIELD, Ph. D ... ..	BIOLOGIST.
J. D. TOWAR, B. S.....	ASSISTANT AGRICULTURIST.
GEORGE M. TUCKER, B. S.....	ASSISTANT AGRICULTURIST.
B. E. HARTWELL, B. S.....	ASSISTANT CHEMIST.
C. L. SARGENT, B. S.....	ASSISTANT CHEMIST.
GEORGE E. ADAMS, B. S.....	ASSISTANT HORTICULTURIST.
NATHANIEL HELME.....	METEOROLOGIST.
BERTHA E. BENTLEY.....	CLERK.

---

The EXPERIMENT STATION COUNCIL consists of the President of the College, the Director of the Station, the heads of departments and their first assistants.



WATSON HOUSE.

FARM BUILDINGS,

# THE COLLEGE.

---

## HISTORY.

IN 1863 the State of Rhode Island accepted from the United States Government the land grant scrip, which gave to each State thirty thousand acres of the public lands for each Senator and Representative in Congress. The land was to be sold by the States, or their agents, the proceeds arising from the sale invested, and the annual income derived therefrom was to be "inviolably appropriated by each State which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to Agriculture and Mechanic Arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

On March 2d, 1887, the act known as the Hatch Act was passed, appropriating \$15,000 annually to each State, for the purpose of establishing an Agricultural Experiment Station in connection with an Agricultural College or School.\*

From the time of the acceptance by the State of Rhode Island of the land scrip in 1863, there were many people who felt that this State did not offer to young men such advantages for instruction in agriculture and mechanic arts as others afforded that had

---

\*See Bulletin No. 1 of Experiment Station.

genuine agricultural and mechanical colleges. So great was the dissatisfaction among the citizens of Rhode Island at the absence of these educational advantages, that they were determined to have the Hatch Agricultural Experiment Station located at a *bona fide* agricultural educational institution.

The Rhode Island State Agricultural School was established according to Chapter 706 of the Public Laws, passed May 23, 1888. (See Fifth Annual Report, page 6.)

The United States Congress, on August 30, 1890, passed an act known as the new Morrill Bill. This appropriated for the further support of the agricultural and mechanical colleges a sum beginning with \$15,000, and continuing with a yearly increase of \$1,000 until the annual appropriation should reach \$25,000.

That the school already established might receive the benefit of the act of Congress, the General Assembly amended Chapter 706 of the Public Laws, (for text see Fifth Annual Report, page 12), incorporating the Rhode Island College of Agriculture and Mechanic Arts.

Since September, 1892, the institution has been conducted on a college basis, with an entirely new course of study.

On April 19, 1894, the Legislature passed an act authorizing the State Treasurer to pay Brown University the sum of \$40,000, in consideration of which the University was to turn over to the State the proceeds of the original Land Grant of 1862, and to withdraw from the United States Supreme Court its suit for the Morrill Fund.

On January 27, 1895, the college dormitory was destroyed by fire, but it was replaced by a new granite building which was ready for use the first of October.

#### GROWTH DURING 1896.

On January 8, 1896, the Board of Managers appointed Dr. Arthur A. Brigham Professor of Agriculture, to begin his duties the following September upon his return from Germany. The

usefulness of our facilities for agricultural instruction is very much impaired by the lack of a barn and a dairy. The College owns but one small barn, which was formerly used for horses and a small herd of cattle ; but the request of the State Legislature, that we provide means of transportation for our students between the College and the railroad station, made it necessary for us to take for more horses the portion of the barn then used for cattle. The department has funds ready to buy cattle for purposes of agricultural instruction, but this cannot be done until the State furnishes a suitable barn for them. It is to be hoped that we may soon have these accommodations, as they will add very materially to the value of Dr. Brigham's equipment, and to the economy of the institution. Then the milk and butter used by the boarding department can be produced here at the College, and at the same time our agricultural students will have a practical illustration of economical dairy management, together with laboratory practice in that line.

At the opening of the fall term, Dr. George W. Field entered upon his work here as Professor of Zoölogy. At the same time our English department was enlarged by the appointment of Miss Lucy H. Putnam as Instructor in Expression. Mr. Howland Burdick and Mr. J. E. Hammond have been made assistants to Dr. Brigham; Mr. Burdick having general supervision of the farm, and Mr. Hammond of the poultry department. Mr. C. H. H. Stone, a graduate of the Massachusetts Institute of Technology, has been appointed instructor in chemistry, and placed in charge of the chemical laboratory.

The entering class for 1896 was larger than that of any previous year, forty-seven out of sixty-eight applicants having been admitted. A number of students have been admitted to advanced standing. Each year as the various departments become better equipped with apparatus, books and other facilities for instruction, there is a corresponding improvement in the quality of the work done. At a meeting of the Presidents of Agricultural Colleges and Directors of Experiment Stations, held at Washington,

D. C., November 10, 1896, the Association adopted the report of the Committee on Entrance Requirements, Courses of Study and Degrees, appointed in November, 1894. Among the recommendations of this report are the following :

“ARTICLE I. SECTION 1. Congress, in establishing and endowing the institutions known as the Land-Grant Colleges, evidently intended that their work for the classes they were designed to benefit should be, as far as practicable, uniform in scope and character in the different states and territories. \* \* \* \* \*

SEC. 2. The act of 1890, further endowing these colleges, points to their development along certain specified lines. In conformity with the spirit of this act, these institutions are constantly tending to become schools or institutes of technology. That they must be collegiate in scope is required by the law itself.

SEC. 3. The steadily increasing tendency to ignore and obliterate all state lines in scientific and educational work ; the free intercourse in social and industrial life among the people of the several states, and, in consequence, the steadily broadening field of usefulness and activity open to the graduates of educational institutions ; the association of the Land-Grant Colleges into a national organization for the protection and promotion of their common interests ; the increasing recognition by the national government of the importance and promise of the work of these colleges—all these considerations make it desirable that the degree or degrees awarded by these colleges should represent work approximately uniform in character and scope ; should be, in other words, degrees of such recognized value as to pass current, each the equivalent of the others, in any state or territory.

SEC. 4. \* \* \* \* \* In some states, for some time to come, concession must be made to the defective condition of the public school system. But it by no means follows that in making such concessions the colleges are prohibited from protecting their standards of work and graduation. These, by proper effort, may be maintained and made to conform in educational value to those of the colleges which are more happily situated. Moreover, a certain community of interest makes it the duty of each college to protect at the same time its own reputation for thorough educational work and the reputation of its sister institutions.

\* \* \* \* \*

SEC 7. It is desirable, also, that the Bachelor's degree or degrees should represent an approximate uniformity in the amount of work done in the several colleges. \* \* \* \* \*

In accordance with the above recommendations, which have

been adopted by all the other land-grant colleges of the United States, and in order to have the work of the Rhode Island college of equal grade with that done in the other states, it becomes necessary for us to raise our standard, requiring for admission to the courses leading to a degree the work now done in our Freshman year, together with one year of language, which may be either German, French, or Latin. This change in our admission requirements might, however, shut out certain pupils coming from our country schools, whom we wish to reach. It is, therefore, thought wise for the present to have a preparatory department, open to those who wish to avail themselves of the educational advantages of the college, but who have not access to schools affording the requisite preparation for entrance to the regular college course. By this means such a student can prepare himself for this course, or can choose special lines of work. It is considered advisable not to attempt this change of course until September, 1898, after which time the examination for admission to the preparatory department will be the same as that for entrance to the present college course.

#### OBJECT OF THE INSTITUTION.

The institution is intended to give technical instruction in agriculture, the mechanic arts, and the sciences, to *anyone* prepared to take advantage of any of the courses offered. Short courses in agriculture and certain lines of mechanics, and special work in science, are open to those unable to take up the regular college work. For these courses no examination is required, except such as will satisfy the professor in charge of any branch chosen that the applicant is prepared to derive benefit from the work he wishes to elect. Whenever possible, however, students are urged to enter one of the courses leading to a degree. The arrangement of these courses is the result of careful thought and long experience as to the best combination of studies to fit one for the various occupations in which a technical education is required; and it is be-



lieved that no such thorough preparation can be obtained from special courses elected by the student.

#### REQUIREMENTS FOR ADMISSION, 1897.

Candidates for admission must bring testimonials of good character and must be not less than fifteen years of age. Oral and written examinations will be given in advanced arithmetic, geography, English grammar, and United States history. Each candidate will be required to write a short composition upon a subject announced at the time of the examination. The composition will be expected to show familiarity with the works mentioned below: Hawthorne's Wonder Book, Dickens's Christmas Carol, Irving's Sketch Book, Scott's Lady of the Lake, Longfellow's Evangeline. Applicants for the regular course will find some knowledge of algebra of great assistance.

On and after September, 1898, the above will be the requirements for admission to the preparatory department.

Students entering the preparatory department, which will open in 1898, may take, together with the regular studies of this course, any other work from the college courses for which they are prepared.

#### REQUIREMENTS FOR ADMISSION, 1898.

Candidates for admission to the Freshman class will be examined in arithmetic; algebra; plane geometry; English grammar; advanced English; United States history; geography, physical and political; physiology; one year of German, French, or Latin.

In the arithmetic examination especial attention will be paid to fractions, the metric system, simple and compound proportion and square and cube root; thorough drill in mental arithmetic will be necessary. The applicant should have mastered all of Wells's Academic or Wentworth's School Algebra, and Wells's Plane Geometry, or their equivalents. In geography, familiarity

with some common school text-book will be expected. Frye's Geography is recommended. In physiology, a knowledge of some standard text-book is required, such as Martin's Human Body (Briefer Course). The history requirements will be met by familiarity with Fiske's or some similar United States history. The examination in English grammar will include definitions, formation of plurals, inflection of nouns, pronouns and verbs, comparison of adjectives and adverbs, analysis and parsing, with especial attention to punctuation and the use of capitals. The advanced English requirements are those prescribed for entrance to the New England colleges. The student will be expected to show familiarity with the works named below. These are divided into two classes. Those marked (*a*) are to be read, and the candidate will be required to show a general knowledge of their subject-matter, and of the lives of the authors. Those marked (*b*) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure. The books prescribed for 1898 are the following: (*a*) Milton's Paradise Lost, books I and II; Pope's Iliad, books I and XXII; The Sir Roger de Coverley Papers, in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's Rime of the Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. (*b*) Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's Flight of a Tartar Tribe; Tenyson's The Princess. The language requirements will cover one year's work in either French, German, or Latin. In French and German, this requirement comprises the essentials of grammar, easy reading, and elementary composition. In Latin, the candidate must be prepared to study Cæsar. The following text-books are recommended: Chardenal's Complete French Course, Lyon and De Larpent's Primary French Translation Book; the Joynes-Meissner German Grammar, Part I; Guerber's Märchen and Erzählungen, Part I; Collar and Daniel's Beginner's Latin Book.

## ADMISSION TO ADVANCED STANDING.

Candidates may enter any of the higher classes for whose work they are prepared.

## OPPORTUNITIES OFFERED TO WOMEN.

The courses offered to men are open to women, together with special courses. The women's dormitory will accommodate a limited number of students, and the College will on application find boarding-places for others in private families in town. Special waiting and study rooms are provided for the women who are day students.

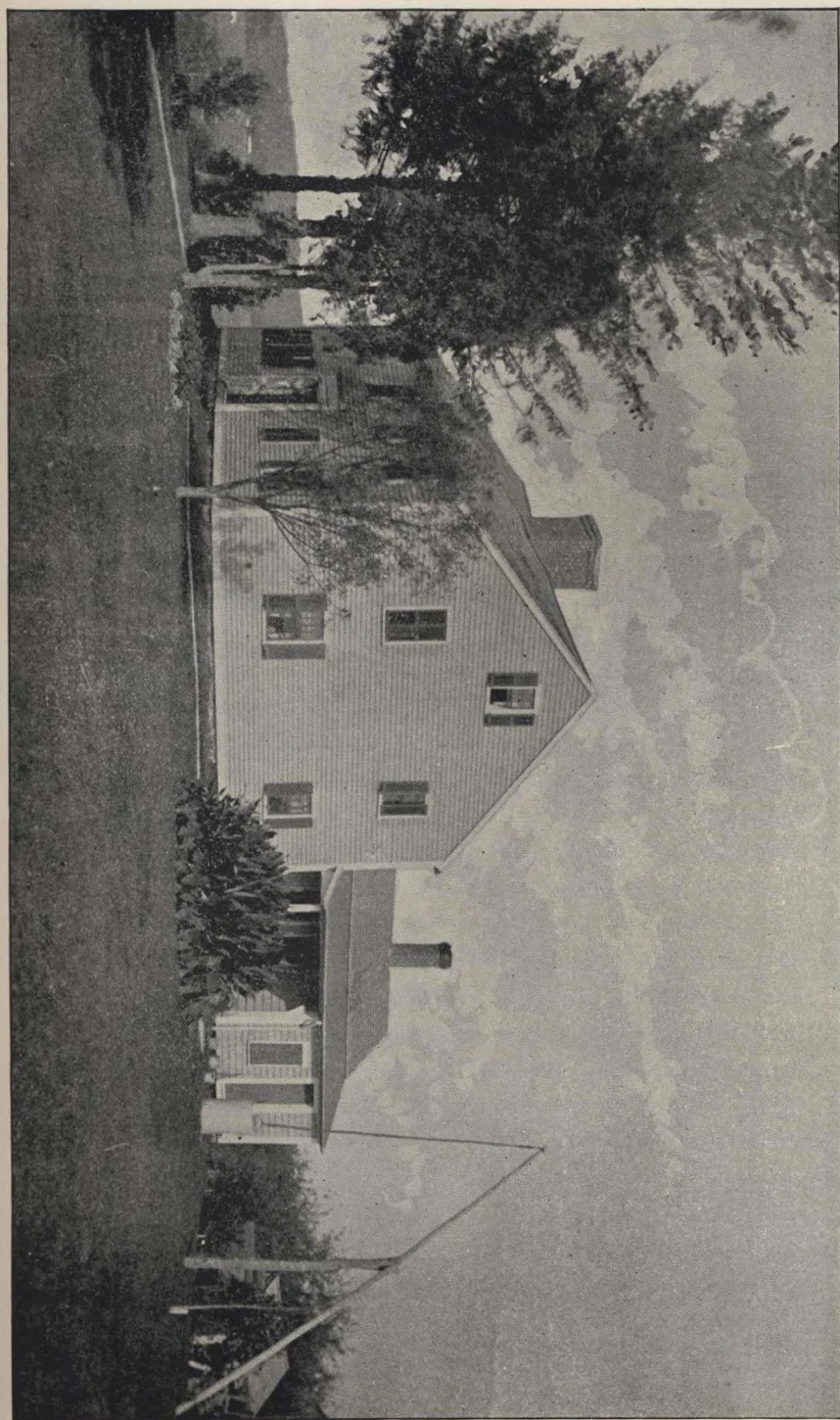
## EXPENSES. \*

Tuition is free to all Rhode Island pupils. The regular expenses are tabulated below :

	Per Year.	
	Minimum.	Maximum.
Room rent, \$2 per term.....	\$6 00	\$6 00
Board, \$3 per week, for 36 weeks.....	108 00	108 00
Fuel, spring and fall terms, each \$3, winter term \$6.....	12 00	12 00
Light, \$1 to \$3 per term.....	3 00	9 00
Books.....	15 00	30 00
Washing, 30c. to 60c. per week.....	10 80	21 60
Uniform for military drill, \$15.....	7 50	30 00
Reading room tax, 25c. per term.....	75	* 75
General expense, for damage in buildings, etc., 50c. per term	1 50	1 50
Laboratory fees, \$2 to \$10 per term.....	6 00	30 00
	\$170 55	\$248 85

The amount of laboratory fees depends upon the laboratory work taken each term. One dollar per term is charged for each of the following: Botanical, zoölogical and physical laboratories; carpenter shop; wood-turning; forge shop; machine shop and

\* For exceptions in the expenses for women, see p. 20.



wood-carving. This pays for the material ordinarily used in class work and for the wear and care of tools and apparatus. Any person who breaks apparatus or tools through carelessness or neglect of instructions will be charged the cost of the same. The chemical laboratory fee is three dollars per term for qualitative, quantitative and organic laboratory work. This covers general chemicals and use of apparatus. Students are required to pay for breakage and for any chemicals they may use in making special preparations for themselves. The uniform must be paid for immediately on entering the college, when the students are measured for the suits. Every able-bodied male student is required to drill and to wear a uniform. When worn only on drill and properly cared for, one uniform may last two or more years. The student may, however, wear his uniform all the time. A reduction of fifty cents per week on board is allowed to students going home Friday afternoon and returning Monday forenoon, provided that notice of the intended absence is given in advance. Those failing to give such notice will be charged full price for board. No other reduction is made for less than three whole days' absence at one time, and this only when notice is given as above. Fifteen cents extra is charged for each meal sent to a student's room, from sickness or any other cause. The college conveys students daily to and from the railroad station free of charge. Once at the beginning and end of each term a team conveys trunks to and from the station. All students in the men's dormitory are required to supply their own furniture and bedding. The necessary furniture may be obtained at the college when desired. A room may be furnished for from eight to ten dollars. Iron bedsteads, three feet wide, and curtains are included under room-rent. The furniture, if properly kept, may be sold when the student leaves for one-half to three-fourths the original price. All clothing should be distinctly marked. Graduates pay the cost of diplomas, five dollars. No diploma will be issued until the candidate has paid all term bills. Day students are required to deposit ten dollars per term in advance. Boarding students may pay term bills in advance, deposit fifty

dollars each term, or give bond for two hundred dollars for the payment of all bills. No bond will be accepted from any member of the faculty.

#### EXPENSES FOR WOMEN.

Board, including room-rent, is three dollars per week. Fuel and lights are supplied at cost. Rooms are furnished, with the exception of bedding and towels. Other expenses are as given above. The women have opportunity to do their own washing and ironing.

#### SELF-HELP.

A limited amount of work about the buildings, on the farm, at the experiment station, and in the laboratories, will be furnished to students who desire it, and who prove industrious and trustworthy. Good students who desire to help in paying their expenses should be able to earn from twenty-five to one hundred dollars per year, depending upon the amount of time they can spare from their studies. No work is given students who have not a fair standing in their classes. The larger sums can be earned only by students who spend their vacations here at work. These opportunities are offered only to students who show a sense of responsibility in the performance of the duties assigned to them, and a disposition to render a fair equivalent of work for the compensation they receive.

#### REGULATIONS OF THE COLLEGE.

Students who do not understand the elements of gentlemanly conduct will not continue to be members of the institution. Negligence or absence from class duties of any kind will be vigorously opposed. Students are expected to attend all recitations. An excuse for absence from a single exercise is not required. It is supposed that the student will not absent himself unless he has

sufficient reason for doing so, and of this reason he must himself be judge. Any student absenting himself from more than ten per cent. of the total number of recitations in any subject shall not be allowed to take his examination in that subject, but shall be conditioned. Examinations of conditioned students shall be held only on the first day of each term. Any student who after such examination shall still have three or more conditions shall be obliged to withdraw from the college. Students still having not more than two conditions may take second examinations at the next regular time, and failing to pass shall have no further opportunity to remove such conditions except by special vote of the faculty.

Students rooming in the dormitory are expected to conduct themselves with the same decorum as in a private house. Any undue noise or actions liable to disturb the other occupants of the building will cause the offender to be publicly warned, and on a repetition of the offence he will be dismissed from the dormitory, for a stated time or permanently, according to the nature of the offence. Money paid for dormitory expenses will not be returned to any student thus dismissed.

#### PUBLIC WORSHIP.

The students are expected to be present at chapel exercises every morning, and on Sundays to attend service in some church at least once a day. Absence from chapel must be reported at the President's office for excuse on Tuesday morning of each week. A branch of the Intercollegiate Young Men's Christian Association is doing good work among the students; meetings are held every Wednesday evening. Eminent preachers are from time to time invited to address the students.

#### LOCATION.

The College is situated on a hillside, which furnishes it with quick drainage and a delightful view. It is less than two miles

from the railroad station. A macadamized road leads from the grounds to the station, insuring at all times a good walk and drive. The railroad station is situated on the New York, New Haven & Hartford R. R., with twenty-one trains daily, in the winter, stopping at Kingston, and more in the summer. The town is a very healthful place, five or six miles from the ocean.



## DEPARTMENTS OF INSTRUCTION.

---

### CHEMISTRY.

Instruction in chemistry begins with the third term of the Sophomore year, and consists of recitations and lectures with laboratory work. Any branch of chemistry may be elected for special work. After 1897 a chemical course will be offered. General chemistry is taught during the last term of the Sophomore and the first term of the Junior year, in two hours of recitation and lectures and four hours of laboratory work each week. Special attention is given to inorganic preparations and problems, the student performing the work for himself. Qualitative analysis extends through two terms, and is followed by volumetric and quantitative analysis. A course in organic chemistry, in the winter term of the Junior year, treats of the hydrocarbons and their derivatives as far as the benzene series, two hours per week being devoted to recitations and lectures and four hours to laboratory work. The class work is based upon Remsen's Organic Chemistry, and the laboratory practice on Gatterman's Practical Methods of Organic Chemistry. An elective on the benzene series, with two hours of recitation and two hours of laboratory practice per week, is given in the spring term. The instruction in agricultural chemistry consists of lectures and recitations with laboratory work upon artificial digestion; analysis of soils, fodders, and fertilizers, milk, butter, and cheese; tests for poisons in the stomachs of different animals; analysis of fruits for sugar, starch, and albuminoids; and the study of chemical changes in soils. Women may

substitute for agricultural chemistry an elective on the chemistry of cooking. A five-hour course in sanitary chemistry or in physiological chemistry may be taken by students who have completed courses I, II, III., and IV. Elective work in the dyeing of wool, cotton and silk, and of mixtures of the same, is offered to those who have finished the courses in general and organic chemistry and quantitative analysis.

### PHYSICS.

The instruction in physics begins with the first term, Sophomore year, and consists of lectures and recitations attended by all regular students. The various branches grouped under this head are treated both mathematically and experimentally, particular attention being given to practical application. Sound and heat are studied in the fall term, magnetism and electricity in the winter term, and light and mechanics in the spring term. To the subject of electricity the whole of the winter term is devoted. As much valuable apparatus has been added during the past year, the facilities for instruction have been greatly increased. The study of light embraces an extended discussion of photography, photo-micrography, the use of the microscope and of the projecting lantern. The study of lantern manipulation is of especial value to those who intend to become teachers, and this department is fully equipped to illustrate the use of any form of light employed at the present time in projection work, together with all accessories including the projection microscope and apparatus for the projection of photographs in original color.

A course in advanced physics is open to all students who have completed course I. or its equivalent. This course includes a deeper and more theoretical study of the subjects of course I., and is treated by lectures and recitations, together with an extended course in laboratory work designed to make the student more careful and accurate in his work and to encourage original investigation.



THE PHYSICAL LABORATORY,

A special course in electricity is now open to all students having an elementary knowledge of the subject. As a foundation for subsequent work, instruction is given in the theory of electricity, together with thorough consideration of the various technical applications of electricity, including land and sub-marine telegraphy, the telephone, electric lighting, and the electrical generation and transmission of power. Advanced instruction is given in electrical measurements, including the use of the storage battery, (which is constantly becoming more valuable to electric plants), methods of electrolysis, electro-plating and electro-metallurgy, together with a practical understanding of generators and the testing of telegraph and telephone lines.

Special instruction in photography is offered in an elective course to students who have an elementary knowledge of physics and chemistry. The course embraces lectures and recitations upon the subject, together with practical methods of photography in the working of negatives, photographs, bromide enlargements and lantern slides. The college is provided with the most approved form of apparatus for X-ray photography, and the theory of the work in this line is taught, together with its practical applications.

The new laboratory which will be in use by this department after 1897, will add greatly to facilities for instruction to advanced students.

#### PHYSIOGRAPHY.

The Freshman class study physiography during the first term, with three exercises per week of recitation and one of laboratory work, with occasional excursions and field work. A well equipped physiographic laboratory, with globes, models, maps, charts and other illustrative material, together with a special library, is open to the students. Especial attention is given to the scientific phases of the study,—to the chemistry and geology of the soils, the influence of air and water on the same; and some reading and time are expended on the flora and fauna of the different coun-

tries. Tarr's Physical Geography is taken as a basis; and Dana's Coral Islands, Shaler's Aspects of the Earth, and Dana's Characteristics of Volcanoes are thoroughly studied during the term. Five hundred lantern slides illustrating ethnological subjects are projected and explained before the class. This course seems especially valuable to introduce the student to the scientific studies which are to follow.

#### AGRICULTURAL GEOLOGY.

The course in agricultural geology embraces structural, dynamical and historical geology, particular attention being paid to the first-mentioned subdivision. A careful study is made of those minerals and rocks of importance in the formation of soils, of the agencies by which their decomposition is effected, and of the compounds which result. In this connection, the instruction is designed to familiarize the student with the desirable mineral and physical features of soils, with those compounds the presence of which is undesirable or which may give rise to a greater or less degree of soil sterility, and with the means by which such conditions may be avoided or overcome. A proportionate amount of time is devoted to the history of those natural deposits of particular interest to agriculturists; such as, nitrate of soda, the German potash salts, and phosphates of various kinds.

#### BOTANY.

The required work in botany for students in mechanics covers two terms; and for students in agriculture, three terms. The first two terms are devoted to the study of a few groups of plants from the lowest to the highest. Seed-plants of economic importance are studied in the third term. Work may be elected by agricultural and mechanical students as indicated in the Courses of Instruction.

Each student is supplied with a compound microscope, a dis-

secting microscope, reagents and small instruments. The laboratory is provided with apparatus for simple physiological experiments, a microtome, paraffin bath, a set of Frank and Tschirch charts, thirty Brendel models, Briosi and Cavara's Parasitic Fungi of cultivated plants, Ellis's Fungi Columbiani, and an increasing collection of native plants. A good working library and several American and foreign periodicals are an important part of the equipment of the laboratory.

For the course of study which will be given by this department after 1898, see pp. 65-71.

#### COMPARATIVE ANATOMY AND PHYSIOLOGY.

*First Year.*—Elementary anatomy and physiology through the winter and spring terms.

*Third Year.*—Comparative anatomy, chiefly of the vertebrated animals during the winter and spring terms.

*Fourth Year.*—Advanced anatomy and physiology, comparative anatomy, comparative physiology and microscopic anatomy through the entire year; veterinary science during the winter term; physiological psychology through the spring term.

This department has been greatly enriched by the furnishing of ample lecture-rooms, laboratories, and a special library. Several thousand dollars have been expended for a synoptical collection for the study of zoölogy and human and comparative anatomy. In the laboratories are found all necessary conveniences for dissecting, mounting and preserving animals, and for embryological, physiological and microscopical work. For purposes of demonstration, there are (1) mounted microscopical objects representing every kind of tissue and cell in the animal system, (2) the living subject for dissection, (3) alcoholic preservations, models in plaster and *papier maché*, skeletons and stuffed subjects of most of the orders of the animal kingdom, from a sponge to a man, (4) Leuckart's zoölogical wall-charts, and other charts and diagrams of our own

make, (5) ample blackboard facilities of which much is made, (6) chemical and physical apparatus, (7) all necessary mechanical appliances. The collection of skeletons of all the domestic animals cannot be excelled. In the class of birds, there have been added all the species of Rhode Island, comprising some 270 individuals. These prove of exceptional interest and stimulate inquiry because of their local habitat and more or less familiar mien. In the collection are found the skeletons of the great classes of birds showing striking structural peculiarities. It is also proposed to add the nests and eggs of all those species of the collection which nest in the State. It will thus be seen that there is an exceptionally good equipment for teaching the courses in zoölogy, physiology, and anatomy, both human and comparative, which are so liberally provided for in this College.

Apparatus is being collected for the course in experimental psychology. The course occupies but one term and the time given to experimentation is limited. The demonstrations are simple mechanical appliances to illustrate the sensations and perceptions. But few experiments are attempted on the more complex mental phenomena, which require intricate and costly appliances, much time, and more special training than the college students can summon. The beautiful models and charts of the human brain, spinal cord, and organs of special sense, are most serviceable in teaching the mechanism and functions of the great nerve centres. The appliances in this department are so complete as to expedite the study in no small degree. It is believed that a more lively interest is thus created, that more ground is covered, and that a clearer comprehension of this branch is given than could otherwise be done in twice the time allotted to it. The same claim may be predicated of the whole range of biological studies.

#### ZOÖLOGY.

This department is open to students who have done satisfactory work in the course in biology of plants, or an equivalent. There

are two general courses; for Sophomores in animal biology, and for Juniors in zoölogy. Instruction in animal biology embraces a careful treatment, through the laboratory, lecture and text-book, of the general anatomical, physiological and developmental phenomena of animal life; the conditions and the causes of the broad manifestations of life, in the cell, in the individual, and in the race. The types studied are: Amœba, Paramœcium, Vorticella, Hydra, earthworm, frog. Among the questions dealt with are the meaning of such terms as protoplasm, nutrition, growth, reproduction, life, death, the physiological division of labor, heredity, the views held by the different schools of evolutionists, the variation of species, effect of environment, natural selection, parasitism, and geographical distribution. In brief, it is a course adapted for the general student, who wishes a knowledge sufficient to comprehend and to profit by the important current discussions bearing upon man's relations to his environment; at the same time it gives a broad foundation for one who plans to enter upon a career in biological science, either as teacher, investigator, or medical practitioner.

The course in zoölogy is intended especially for (1) agricultural students, (2) students who are preparing for entrance to the medical profession, (3) those who having pursued the courses in plant and animal biology wish to advance further into the science as teachers and investigators. Instruction is by actual dissection of the fresh specimens supplemented by lectures, text-book and written exercises.

Proximity to seacoast renders possible the study under natural conditions, as well as in aquaria, of the habits and development of many marine animals. The Experiment Station's Marine Laboratory under the direction of the professor of zoölogy, is open to students who show capacity for effective work. It is located on the shores of the town, near Point Judith, and offers excellent opportunities for original investigation and experimentation upon problems of marine biology. Further opportunities for study are furnished by springs, streams, ponds (natural and artificial), and

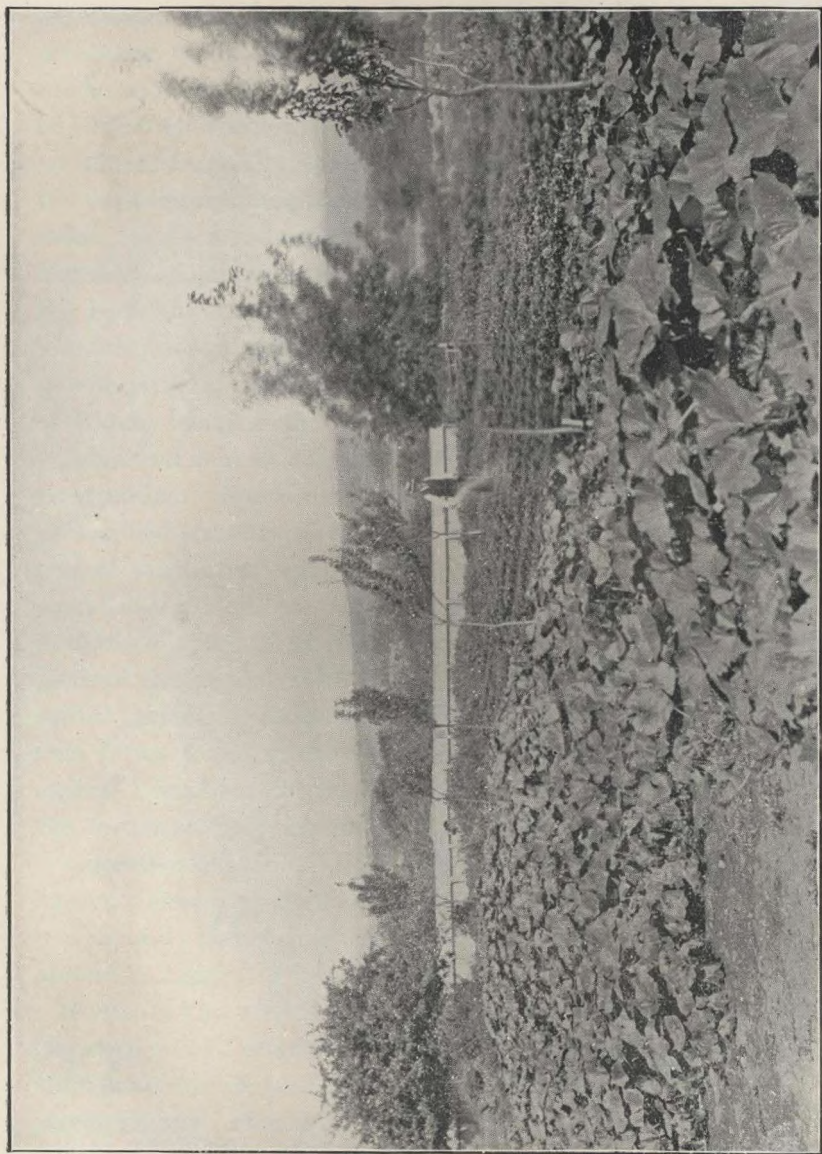


lakes, upon or immediately adjacent to the college grounds. These added to the location of the college township—in the southeast corner of Rhode Island, with its diversity of coast line, the east on Narragansett Bay, its south shore on the Atlantic—renders the institution an ideal locality for biological study.

The department is provided with Leuckart's charts; Ziegler's and other models; preparations of skins and skeletons of typical vertebrated animals; preserved specimens and preparations of the most important invertebrated forms; aquaria for living specimens; projection lantern for class demonstration of macroscopic and microscopic preparations. The department library includes the best literature on the subject; all of the current zoölogical journals are available, either at the Experiment Station library or by special arrangements. The collection illustrating the zoölogy of Rhode Island is the best in the State, and is steadily growing.

Advanced courses are open to students who have had the requisite training. Comparative normal histology, dealing with the microscopical structure of cells and tissues of the organs of the lower and of the higher animals, including modern methods of micro-chemical technique and histological investigation, is a course particularly adapted for students who intend to fit themselves for the medical profession. The course in morphology of the invertebrated animals offers an opportunity for careful study of the marine forms found in Narragansett Bay, and in addition certain typical forms from abroad. A course in comparative osteology of the vertebrated animals permits an extension of the courses in comparative anatomy. Comparative embryology is offered as a special course to students who are sufficiently advanced. General comparative embryology is covered in the courses in plant and animal biology.

Students who wish to make a specialty of biological science for the purpose of becoming science teachers or of pursuing a medical course are advised to give the utmost possible attention to physiography; chemistry; physics; English; German; French; Latin; freehand drawing, including water colors; civil govern-



THE HORTICULTURAL DEPARTMENT.

ment and political economy, in addition to the biological sciences.

Students are urged to consult freely with their instructors in regard to selection of courses.

### AGRICULTURE.

In connection with the new course in agriculture as proposed on page 72 it may be said that the foundation instruction in the science of agriculture is largely given in the study of chemistry, botany, physics, geology, anatomy, physiology, zoölogy, and economy. Following upon this fundamental knowledge, it is the aim in the agricultural course to teach the student the practical application of the scientific principles underlying technical agriculture. This is sought to be accomplished by means of lectures and recitations and by the use of text-books and reference books so far as available. The chief desire is to supplement and enforce and fix this instruction by what may be termed laboratory work in agriculture; that is, by actual educational practice in the different branches of farming.

Commencing in the spring term of the Freshman year, an introduction is given in the form of lectures dealing with the origin and necessity of agriculture, its relation to other occupations, the preparation for farming, the relations of air, water and sunshine and of plant and animal life to agriculture. In the Sophomore year, a study is made of farm soils,—their characteristics, classification and adaptations, their faults and means of improvement, clearing land and preparing for crops; land drainage, with practice in planning and constructing systems of underdraining on the college farm; irrigation and tillage. In the winter term, instruction is supplied in the construction, use and care of farm implements, machines and vehicles; and in the arrangement, construction and maintenance of farm buildings, fences, roads, and bridges. In the spring term, fertilization is dealt with, and the instruction is reinforced by object lessons offered by the fertilization experiments of this experiment station department and by the manuring of the

farm crops. In the Junior year, horticulture is chiefly taught; embracing the topics—garden crops, market-gardening and greenhouse culture, fruit culture, floriculture and ornamental gardening, with plant breeding and forestry as special elective subjects. In the Senior year opportunity is provided to study live stock farming, including the breeds, breeding, care and management of farm animals; rational feeding of live stock; dairy; husbandry; poultry farming; farm management and accounts.

Further elective subjects are available to advanced students by special arrangement, including the history and economics of agriculture, agricultural and horticultural literature, farm law, apiculture, agricultural debate, and agricultural experimentation.

Plans for short courses in agriculture have been made. These courses will instruct special students in the principles and details of the best modern practical dairy farming, poultry farming and horticulture. For putting these courses into operation the college awaits the providing by the state of suitable buildings. There are funds available for the purchase of live stock, apparatus and equipment, also for instruction. The provision of the needed buildings will at the same time greatly reinforce the means of instruction in the regular agricultural course.

#### HORTICULTURE.

For description of work offered under this department, see Agriculture.

#### LANGUAGES AND HISTORY.

The subjects grouped under this head are English, German, French, Latin, expression, and history.

English—comprising composition, rhetoric, and literature—is studied during the four years. In the Freshman year, a preparatory review is followed by an elementary course of rhetoric. Written exercises are required, and there is a careful reading in the class room of representative works by famous authors, principally American, with the aim of developing early in the students

a taste for literature. More advanced work in rhetoric and composition is given during the fall and winter terms of the Sophomore year, and the reading of American authors is continued. The winter and spring terms of the Junior year are devoted to general English literature. English history is studied at the same time, as it is thought impossible to understand an author apart from his age. Individual research is encouraged, and will increase, it is hoped, from year to year. As far as possible, entire works of the most noted authors are critically read in class. Exercises in composition give opportunity for detailed treatment of special topics. An elective in English literature, designed to supplement the general course, is offered throughout the Senior year; and Seniors may also elect essay writing and orations.

German is required throughout the Junior year, and is elective during the Senior year. As far as possible, the language itself is made the medium of instruction, and the subject is studied in grammar work, dictation, conversation, and translation—from English into German and from German into English. The course is carefully graded. As soon as a small vocabulary is acquired, the student begins the reading of simple prose and poetry, passing gradually to more difficult texts.

French is required throughout the Sophomore year, and is elective during the remaining two years. It is the aim of the department to make the instruction in this language similar to that given in German, with the expectation that the results will be greater in consequence of the longer time allotted to the subject. French, like German, is taught by means of grammar, conversation, dictation, translation, and composition. Progressive work throughout the three years will make it possible for the student at graduation to read with ease ordinary French, both literary and scientific.

Latin is elective throughout the course. The instruction is designed to acquaint the student with certain literary masterpieces, to aid him in comprehending the terminology of science, to facilitate the study of the modern languages, and to ensure a mental discipline which will be of value along all lines of work.

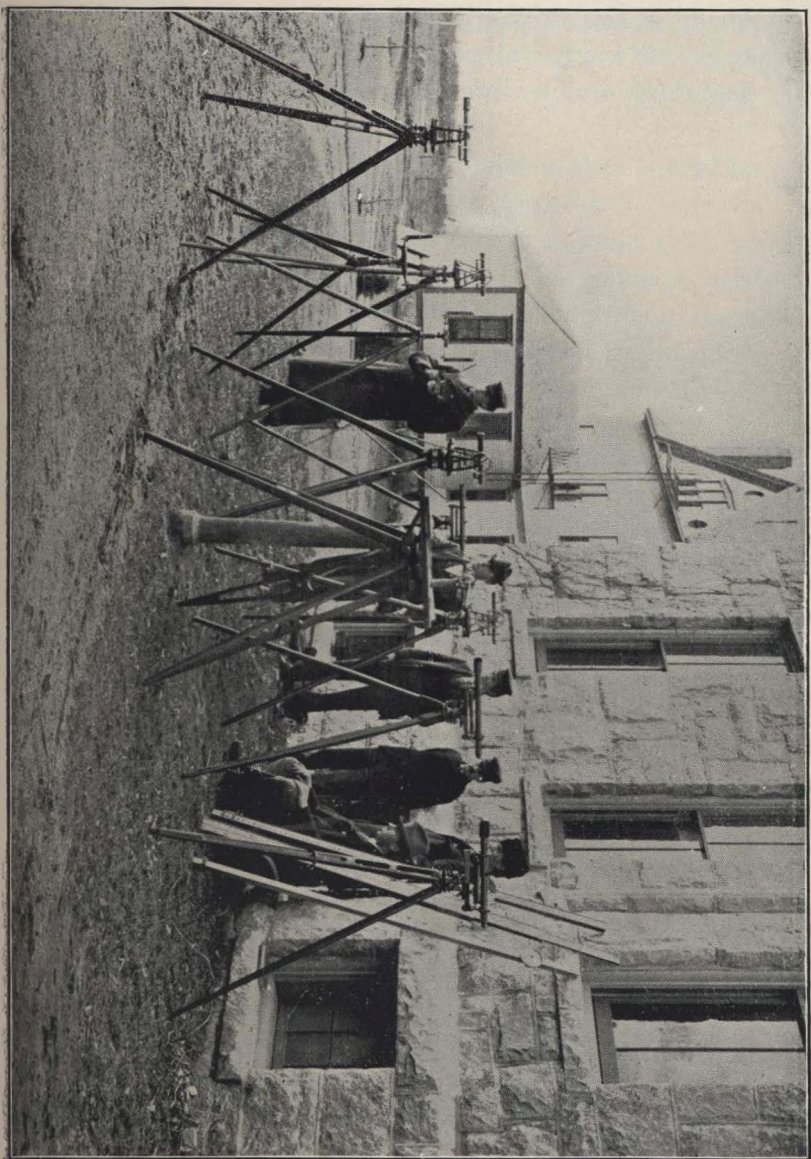
The aim of the course in expression is to teach the student to read easily and intelligently and to think accurately and rapidly. The work consists of sight reading, extemporaneous speaking, recitations, and the delivery of original orations. Expression is required throughout the Freshman year, and is elective during the other three years.

In the fall term of the Freshman year, a careful review is made of American history, followed in the other two terms by outline work in general history. The method is topical. No one text-book is used, but students are taught to consult various authorities and to report upon what they have read. In the Junior year, English history is studied in connection with English literature; and an elective for special historical work is offered in the spring term of the Senior year. A carefully selected library, which is constantly receiving additions, greatly enhances the value of these historical and literary courses.

Beginning with September, 1898, the work of the department will be changed to suit the needs of the advanced courses outlined on pp. 65-71.

#### MATHEMATICS AND ASTRONOMY.

Three courses in pure mathematics are required of all candidates for a degree, namely, algebra, plane geometry and plane trigonometry. The work in algebra consists of a systematic drill in the fundamental operations, simple and quadratic equations, the theory of exponents, radicals, the progressions, the binomial formula, and the graphic representation of equations. Especial attention is given to the expression, by means of equations, of the conditions of a problem. In the course in plane geometry particular stress is laid upon the original demonstration of propositions, in order best to develop the rigidly logical methods of thought which are the outcome of exact geometrical work. Numerical problems and practical applications are given whenever possible. This course is followed by a course in plane trigonometry, in which the fundamental formulas are developed and application of



A DIVISION OF THE SURVEYING CLASS.

them is made in the solution of right and oblique triangles. The subject of logarithms is studied and sufficient applications are made thoroughly to familiarize the student with this invaluable aid to computation. It is the aim here, as throughout the course, to select such problems and applications as shall have direct bearing upon practical subjects.

The required work in pure mathematics ends at this point for students in the agricultural course. Candidates for a degree in the mechanical course are required to take in addition, solid geometry, analytical geometry and calculus. In the course in solid geometry are studied the point, the line and the plane in space, the familiar polyhedrons, the cylinder, cone and sphere, including the measurement of these solid figures. The course in analytical geometry includes the subject of loci and their equations, the analytical demonstration of many geometrical theorems, and the simpler properties of the conic sections. The work in calculus includes the differentiation of algebraic, trigonometric, anti-trigonometric, exponential and logarithmic functions, successive differentiation, and the integration of simple functions, illustrated by applications to the rectification of plane curves, the areas of plane curves and the surface and volume of solids of revolution. The fundamental formulas of mechanics are developed and illustrated. The more familiar devices for integration are studied and a short time is devoted to the interesting subject of curve-tracing.

The primary aim of the entire course in mathematics is to stimulate original work, to insist upon and develop a capacity for clear thinking and logical, systematic reasoning such as will prove invaluable in any department of study or life, as well as to achieve familiarity with such mathematical principles as are necessary for applied work.

A growing reference library affords an opportunity for wider mathematical reading, the value of which is constantly becoming more fully appreciated by the students.

Several elective courses are offered by the department, and others will be added from time to time as may seem advisable.



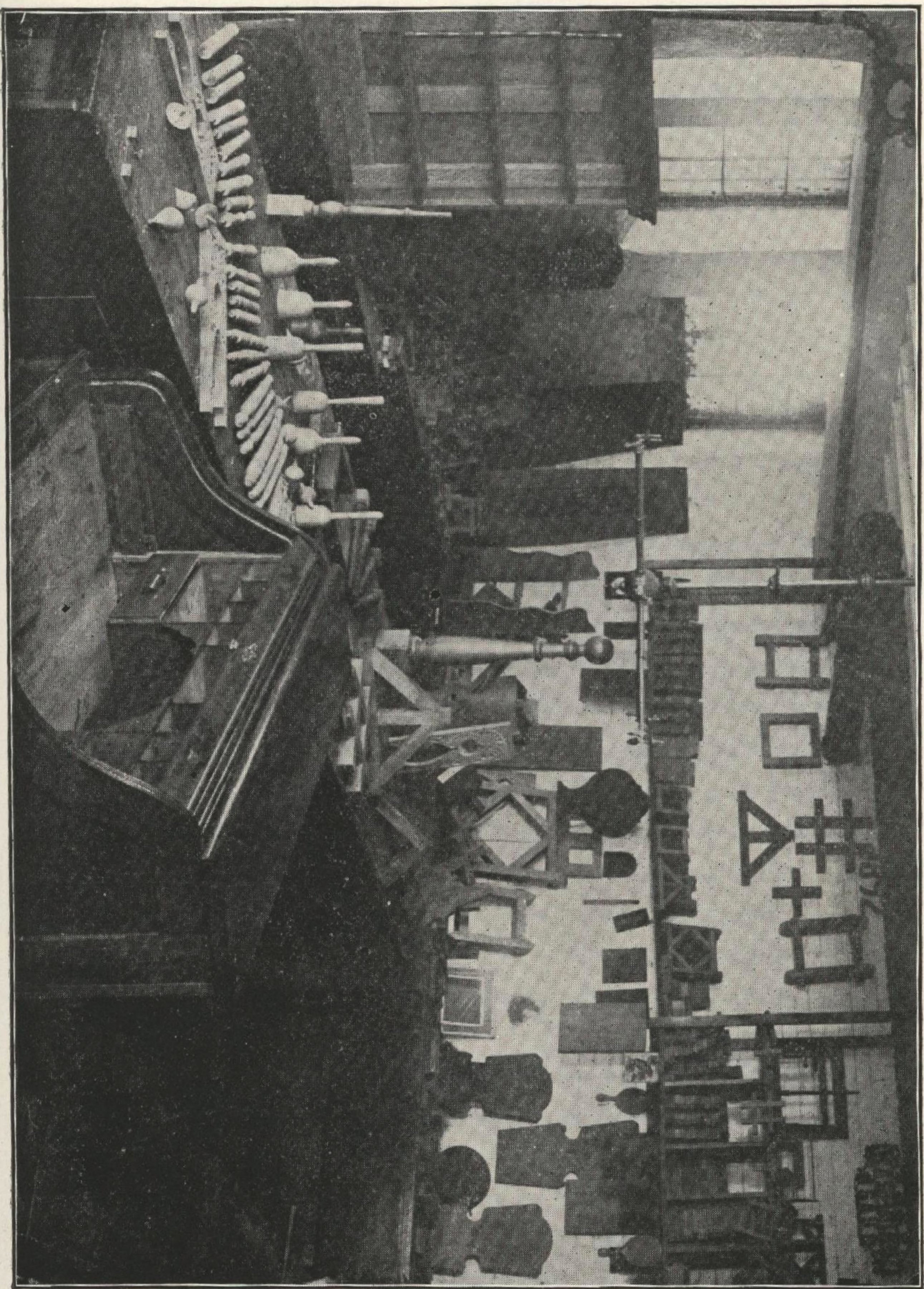
In pure mathematics courses are offered in college algebra, open to all who have completed the required work in algebra; in modern synthetic geometry, open to all students who have completed the required courses in algebra and plane geometry; in elementary curve-tracing, open to all students who have completed the required courses in algebra and plane geometry; in the theory of equations, with determinants; in advanced integral calculus; in spherical and higher plane trigonometry, and in solid analytical geometry.

The courses in applied mathematics will be found under the heads of civil engineering, mechanics and astronomy.

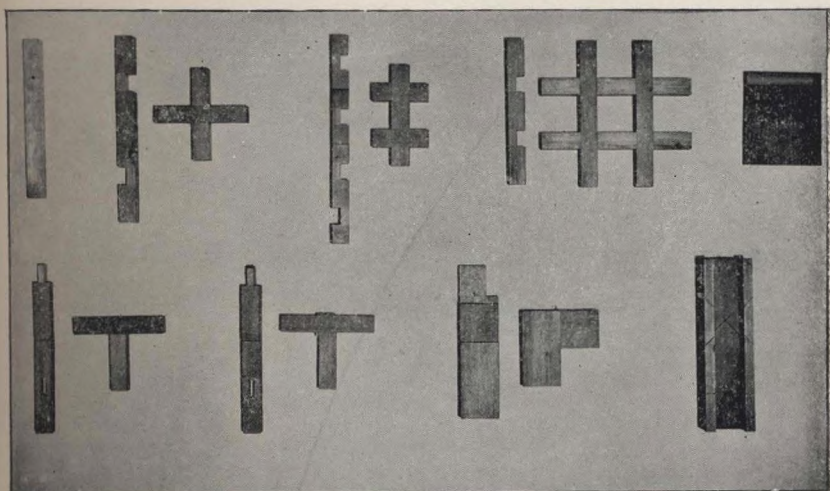
Two elective courses are offered in astronomy, one in practical astronomy, in which the simpler problems of practical astronomy are discussed, and a lecture course in physical astronomy, the aim of which is to make the students familiar with the general characteristics of the various members of the solar system, and to emphasize the general laws which govern the universe. A four-inch equatorial telescope, an eighteen-inch celestial globe, a large collection of lantern-slides of astronomical phenomena and a small but carefully chosen reference library, add greatly to the resources of the department.

In civil engineering, four courses are offered. The Freshmen are given practice with leveling instruments in connection with the work in drainage. Plane surveying is taken up by the Agricultural Sophomores in the spring term and is followed by a course in leveling, grading, and road construction during the first term of the Junior year. This work is supplemented by practice with the compass, chain and transit in measuring areas and plotting land as well as work with the levels, drawing profiles, and establishing grade lines for roads. More advanced work in engineering is offered the Seniors in the spring term, while throughout the course practical surveying is given, those students desirous of doing extra work in this line.

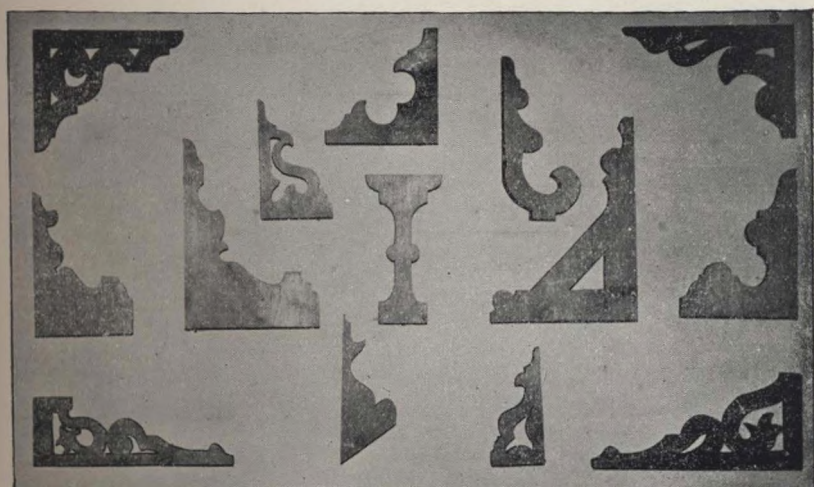
For new courses to be offered by the department in 1898 see pp. 65-71.



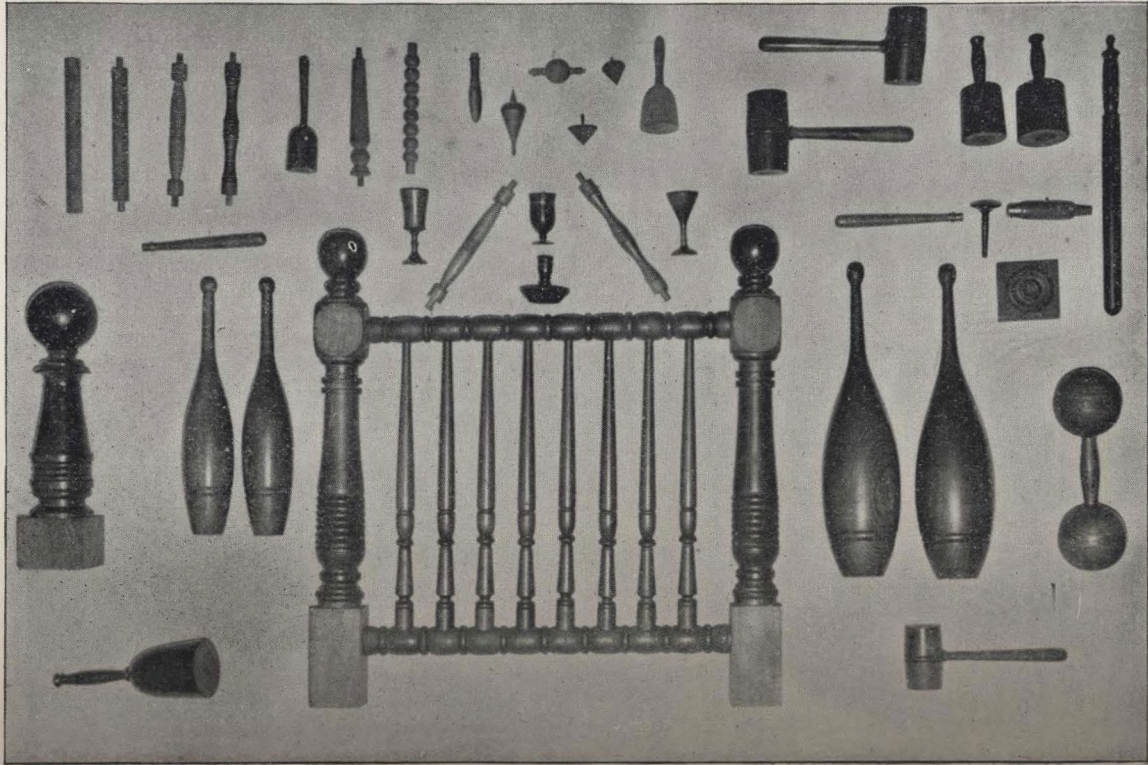
THE CARPENTER SHOP.



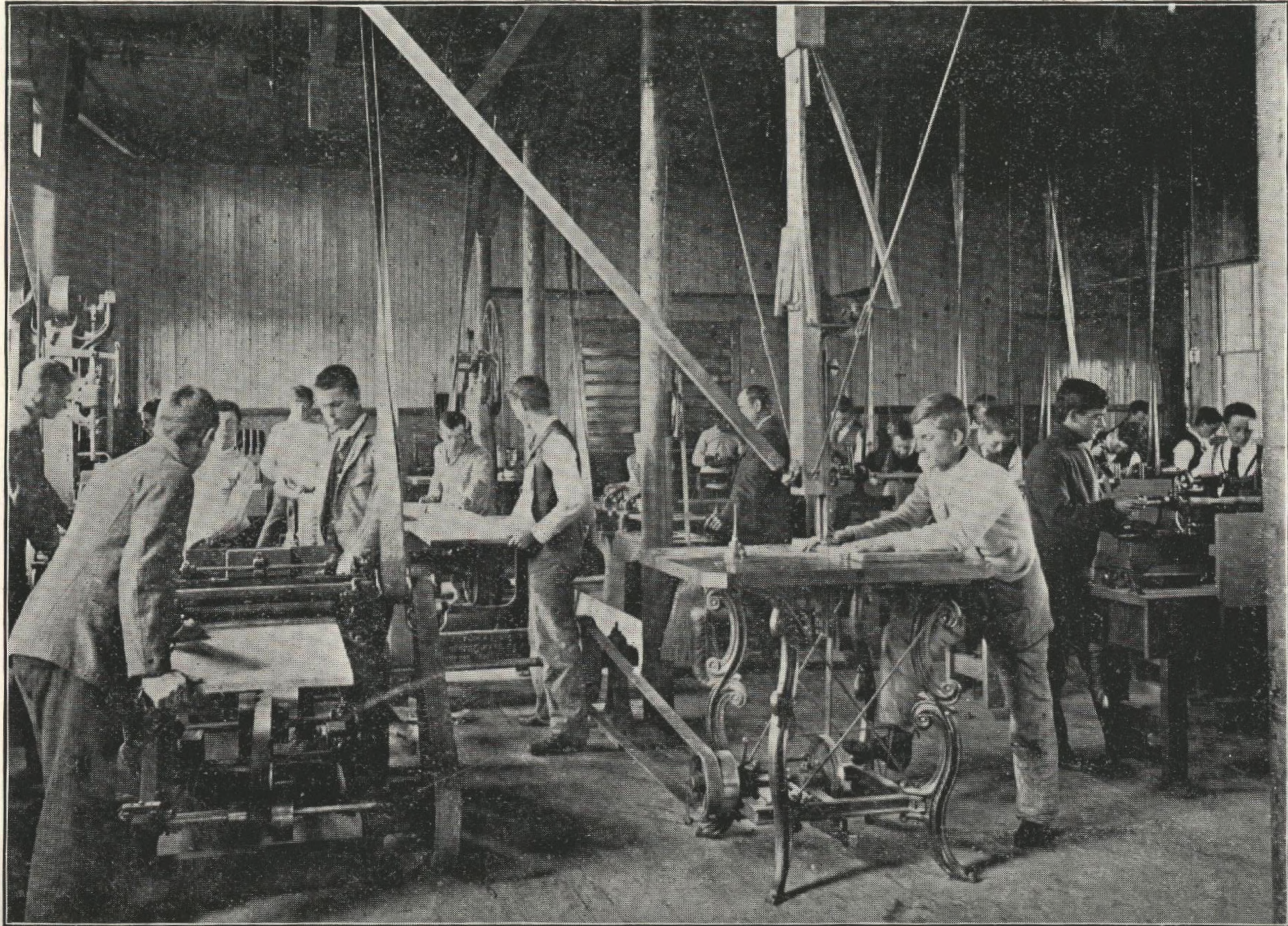
COURSE OF JOINERY.



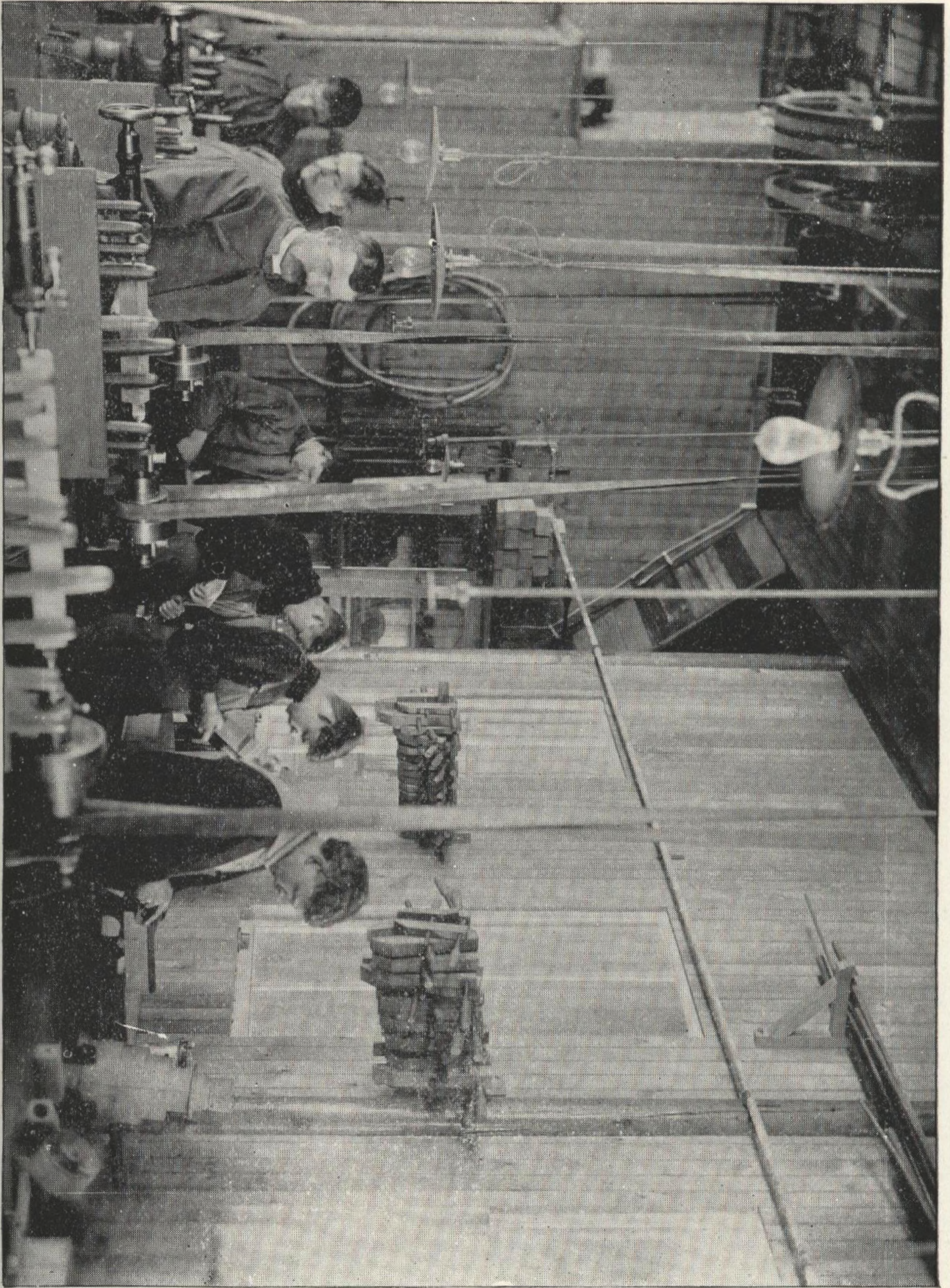
COURSE IN SCROLL SAWING.



COURSE IN WOOD-TURNING.

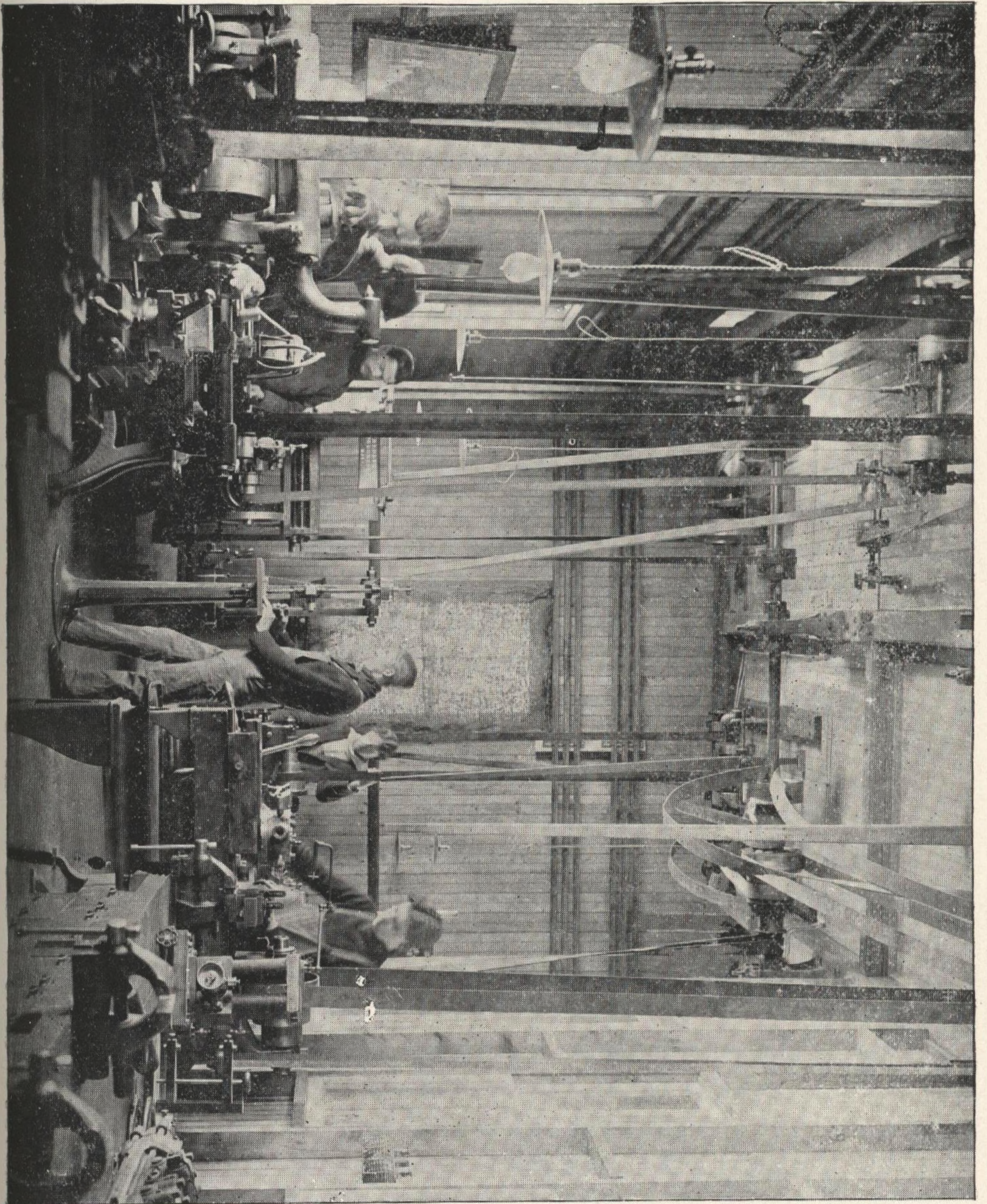


THE WOOD-WORKING MACHINERY.



PATTERN-MAKING.

MACHINE SHOP



**MECHANICAL ENGINEERING.**

The aim of this department is to give sound theoretical and thorough practical training to students who seek to prepare themselves for useful and responsible positions. No attempt is made to teach trades; but the course offered in shop-work will furnish such training as will ensure, other things being equal, marked success in mechanical pursuits subsequent to graduation. The regular four years' course deals with mechanical engineering as applicable to the industries carried on in New England, and particularly in Rhode Island. Special attention is given to the designs and the economical operation of shops and mills, and of manufacturing and industrial machinery. Thorough courses in mathematics, physics, chemistry, electricity, English, French, and German are made the basis of this work. The subjects of mechanism, metallurgy, heating and ventilation of buildings, engineering specifications, and laws of contracts are treated by lectures and text-books. The several laboratories are well-equipped for working in wood and metals and for the testing of materials used in construction. Students in the department of mechanical engineering receive instruction in bench-work in wood, wood-turning, pattern-making, forging, machine-shop work, and mechanical drawing.

Students in the agricultural department receive instruction in wood-working and forging, and may elect other work with the advice and consent of the committee on studies. Women are given the opportunity to elect wood-carving at any time during the four years' course. During the winter term of three months, the shops are open to receive persons who may wish to enter the college and take up special work of a trade nature in any of the above lines. In addition to this work, these students may take a limited amount of time for the study of any related subject.

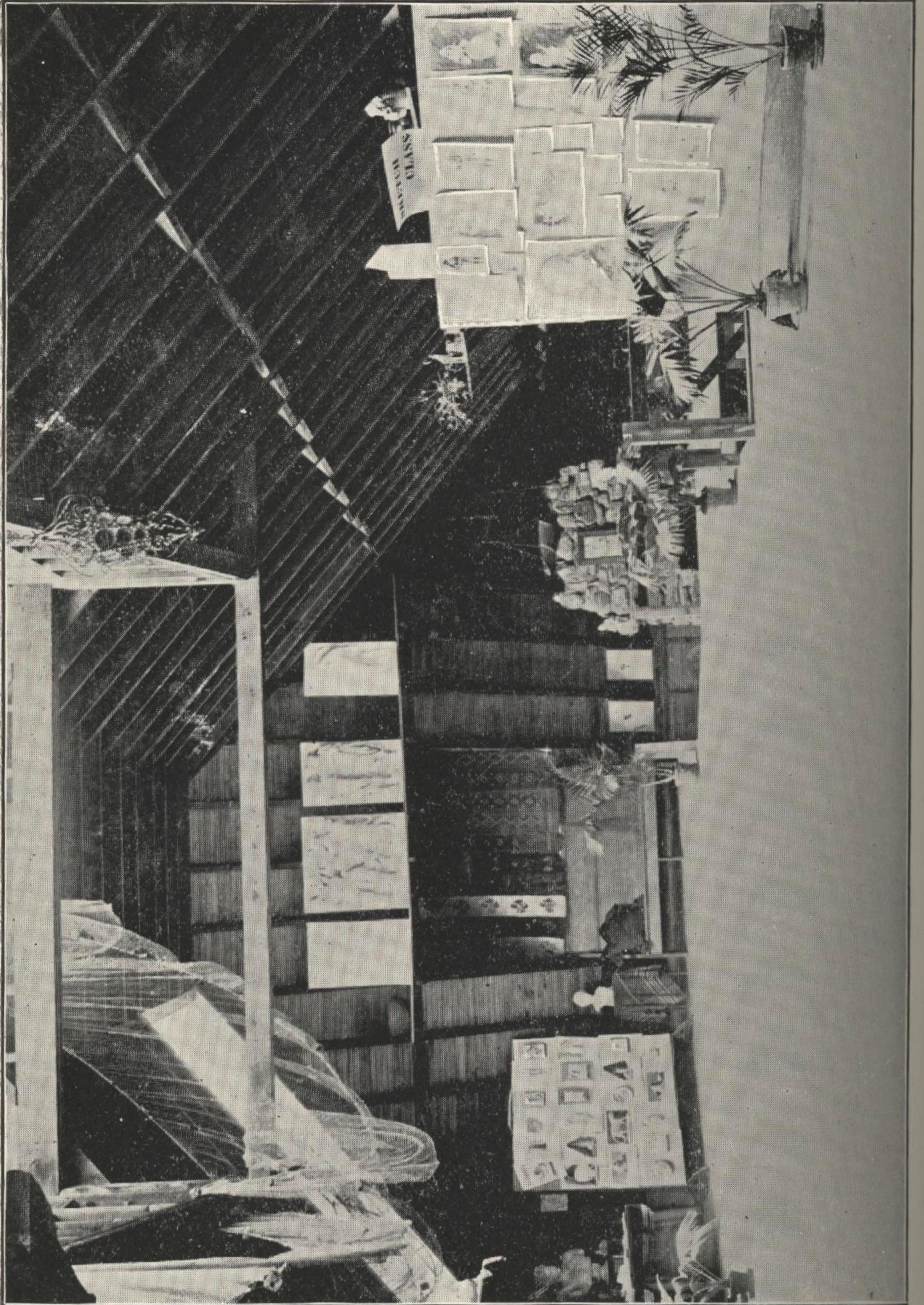
The carpenter shop contains benches and tools sufficient to accommodate twenty-four students at one time. The course is designed to give skill and confidence in working the various kinds



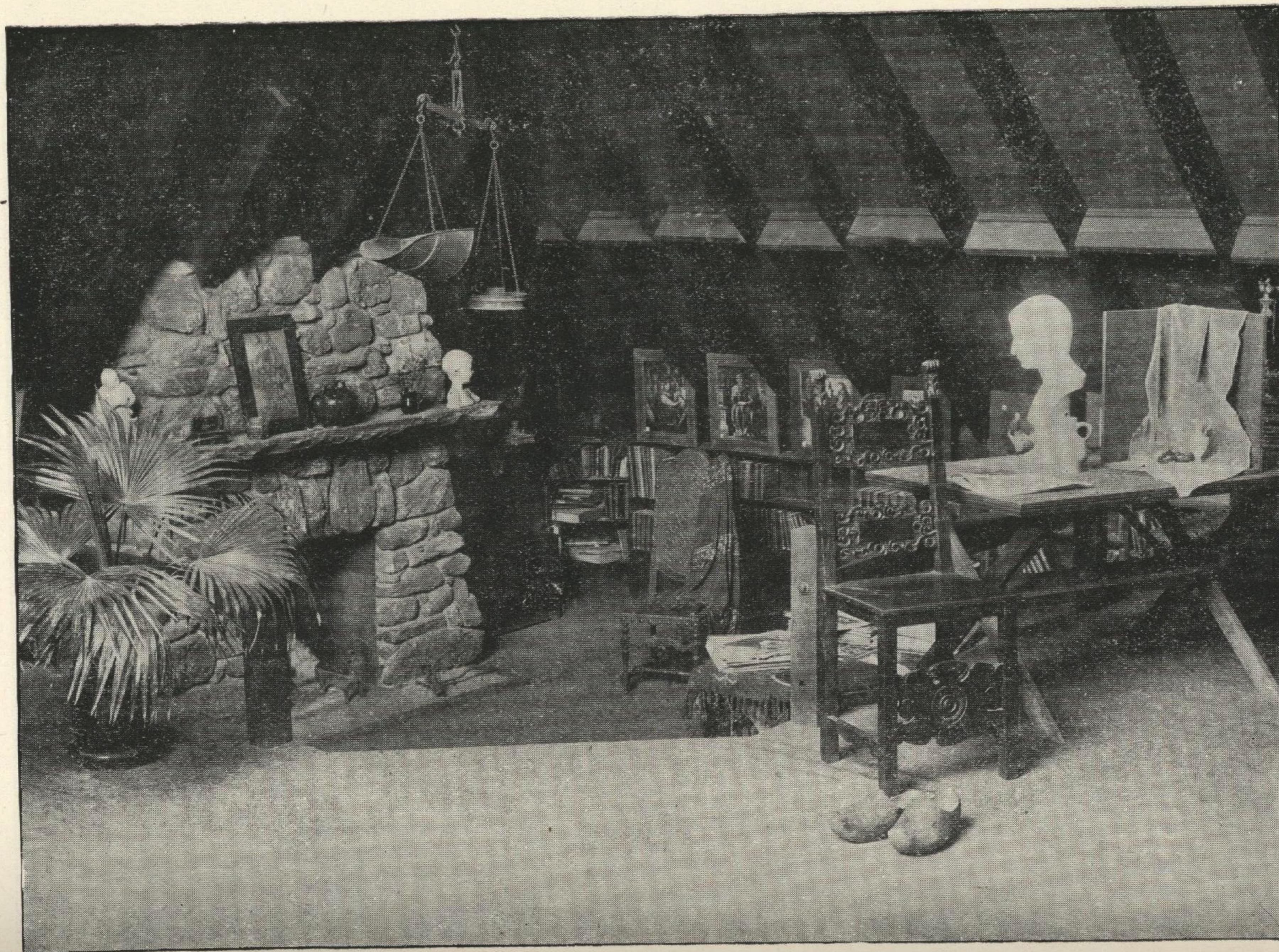
of wood, and also to impart a fair knowledge of the principles of building and construction. A series of practical lectures upon the art of estimating the cost of various constructions of wood is given to the agricultural students of the Sophomore year. The wood-turning room contains thirteen lathes, each with its complete set of gouges and turning-tools. In the same room are benches for pattern-making, and also power machinery for working wood ; such as, circular saw, hand saw, jig saw, surface planer, buzz planer, mortising machine, dowel machine and others. All students take wood-turning, and during the period each has practice under the direct charge of the engineer in care of the shop boiler and engine. This engine is of thirty horse power ; and besides furnishing power for the shop, drives a ten K. W. dynamo for lighting the building. The work in pattern-making given to the students in the mechanical department in the Junior year consists of the making of selected pieces to illustrate the principles of shrinkage, drafts, finish, core-box making, built up work and the general requirements of pattern-making.

The forge shop will accommodate twelve students at one time. It contains twelve forges and anvils, a stock cutter, a bolt header, a post drill, and is well supplied with all the hammers, tongs, and other forge and anvil tools necessary for complete work. A regular course is followed here as in other lines ; and for the students of the agricultural department, the work is of such a nature as is found about a farm. The various operations of drawing, bending, upsetting, and welding are taught and applied in the making of such useful pieces as staples, hooks, chains, and iron work for farm tools. The students of the mechanical department follow a similar course but in a direction more suited to the machine shop. Bolts, nuts, machine forgings, chisels, and lathe tools are made, and afterward put to practical use.

Only students in the mechanical department work in the machine shop. The course here is designed to give a sure knowledge and intelligent practice in the best modern methods of using the various tools ; such as, lathes, planers, drills, milling-machines,



THE STUDIO.



CORNER OF STUDIO.

and grinding machines. A course of hand work at the bench is offered, and includes instruction in chipping, filing, scraping, and finishing. Each student in the machine shop builds a complete machine before finishing the course. Students of former years have made an engine, dynamo, speed lathe, full set of arbors, set of nut arbors, and a variety of other tools.

In experimental engineering the students make tests of engines, boilers, pumps, steam gauges, injectors and a hydraulic ram. The strength of materials is investigated theoretically in class under the head of mechanics of materials, and practically in the laboratory by conducting tests upon specimens of wood, iron, steel, brick, stone, cement, boiler plate, etc. In hydraulics water meters are calibrated and measurements of water made by orifices and weirs. During the spring term of the Senior year the class in mechanical engineering holds semi-weekly conferences; reports are given upon articles in the industrial magazines and journals, and engineering subjects of general interest are discussed. The following are some of the topics considered by the class of '95: types of steam boilers, furnaces, boiler feeders, fuels, lubricants, gas and heat engines, preparation and use of wood, cutting tools for metals, pumping machinery.

Mechanical drawing is taught throughout the Sophomore and Junior years. Students are required to keep notebooks, in which freehand sketches are made from models; and these sketches are afterward worked up into finished drawings. The making of working drawings for some machine completes the course. Practice in tracing and blue printing is given to all students. The course in drawing is designed to aid in the corresponding courses of shop work and not to produce professional draughtsmen.

**FREEHAND DRAWING AND MODELING.**—Freehand drawing is taught only in the spring and fall terms. Freshmen begin in the spring term with the study of values from objects and still life, continuing in the fall to draw and model from casts, with which the department is well supplied. In the Junior and Senior years,

students may elect such work as they are prepared to take. Memory sketches of all objects drawn are expected of each student. The sketch class is an interesting feature of the department. This meets for one hour once a week and is conducted by its members, who pose in turn or find a substitute. These time sketches from life, without instruction, are of great benefit to the student, teaching him to note quickly the effect desired. Each student is required to leave at the college a specimen of his work. Modeling is limited to ten or twelve lessons in the Sophomore year. The library of the studio has a good nucleus of art books.

#### MILITARY SCIENCE AND TACTICS.

The military department is duly organized under Captain William W. Wotherspoon of the 12th Infantry, who was assigned to duty as Professor of Military Science and Tactics by the President of the United States, by special orders No. 257 from the war department, dated November 1, 1894.

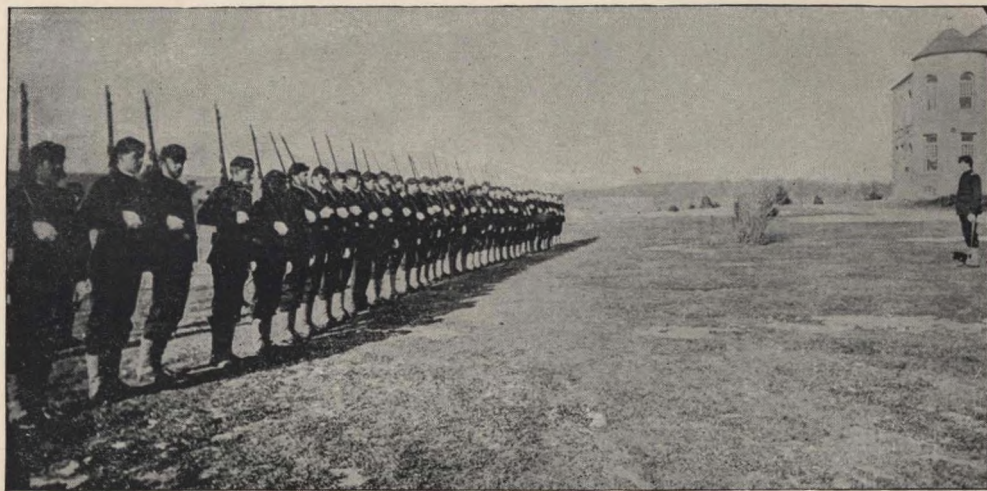
The men students are organized as a battalion of two companies. Four batteries of artillery have been organized, and are drilled in the spring and fall.

There have been two classes under instruction in signaling, and the Seniors and Juniors have a course of military science. No effort has been spared to instill into the cadets a sense of the importance of the work undertaken, while producing a proper and healthful carriage of the body and that quickness and readiness to obey which are necessary in a soldier. The progress made is most satisfactory, and evinces an enthusiasm and intelligence on the part of the cadets which cannot be too highly commended. They have been quick to learn, ready to obey, at all times respectful in deportment and neat in their habits.

The inspections in quarters have resulted in marked improvement in the rooms. All orders have been obeyed; and as the inspections become more rigid, as they will, matters in the dormitory will be much changed.



ARTILLERY DRILL.



INFANTRY DRILL.

The cadets have been uniformed at a very moderate expense in a neat and handsome uniform of fine blue cloth, consisting of a blouse and trousers cut after the pattern worn by the U. S. naval cadets, with forage caps holding the coat of arms of the State of Rhode Island. This uniform is not only handsome and economical but with moderate care will last a long time. It is recommended that white collars and an overcoat be added to it, and that the overcoat be worn at all times out of doors during winter. As at present organized, each company has a full set of officers and non-commissioned officers, who are zealous and painstaking in their duties and show much promise.

The greatest difficulty found so far in this department has been the weather and the limited space under cover for drill. When the weather would permit, drill has been held out of doors; at other times, in the temporary shed built for the purpose. No hours have been lost for any cause, however, and the drill hall and gymnasium now proposed will, it is hoped, be finished in time for next winter. When it is finished, the college will be equipped with a drill hall superior to that of any institution of learning in the United States, and with a gymnasium equal to the very best.



## COURSES OF INSTRUCTION.

---

The following courses of instruction are offered in the different departments. All studies required of regular students lead to the degree of Bachelor of Science.

### CHEMISTRY.

I. General Chemistry, Briefer Course.—Non-metals. Recitations, lectures and laboratory work. *Spring term, Sophomore year; recitations and lectures, 3 exercises per week; laboratory work, 1 exercise of 2 hours per week. Required of all candidates for a degree.*

II. General Chemistry.—Metals. Lectures and laboratory work. *Fall term, Junior year; 3 exercises per week. Required of all candidates for a degree.*

III. Qualitative Analysis.—Laboratory work. *Fall term, Junior year; 2 exercises of 2 hours each per week; Winter term, 2 exercises of 3 hours each per week. Required of all candidates for a degree.*

IV. Organic Chemistry.—Lectures, recitations and laboratory work. *Winter term, Junior year; 4 exercises per week. Required of Agricultural students.*

V. Organic Chemistry.—Lectures and laboratory work. *3 exercises per week. Elective; open to students who have taken course IV.*

VI. Agricultural Chemistry.—Lectures and laboratory work. *Spring term, Junior year; 3 exercises per week. Laboratory work. Fall term, Senior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VII. Quantitative Analysis.—Laboratory work. *Spring term, Junior year; 2 exercises of 3 hours each per week. Required of Agricultural students.*

VIII. Courses in Theoretical or Sanitary Chemistry or Quantitative Analysis.—Laboratory work. *Throughout the Senior year; 2 exercises of 3 hours each per week. Elective; open to students who have taken courses I. and II.*

IX. Dyeing of Textile Fabrics.—*Winter and spring terms, Senior year; 3 hours per week. Elective; open to students who have taken courses IV. and VII.*

#### PHYSICS.

I. General Course.—Study of sound and heat, *Fall term; electricity and magnetism, Winter term; light, mechanics, hydraulics and pneumatics, Spring term, Sophomore year. Recitations, 3 exercises per week; laboratory work, 1 exercise of 2 hours per week. Required of all candidates for a degree.*

II. *Advanced Physics.*—Throughout the year. Recitation, *1 exercise per week. Laboratory work, 2 exercises of 3 hours each per week. Elective; open to students who have taken course I.*

III. Applied Electricity.—A course of lectures upon the modern practical applications of electricity. *Spring term, Senior year; lectures, 3 exercises per week. Laboratory work, 1 exercise of 2 hours per week. Elective; open to students who have taken course I.*

IV. Photography.—A course of lectures and recitations upon the optics and chemistry of photography, together with practical photographic work. *Spring term; lectures, 2 exercises per week; laboratory work, 2 exercises of 3 hours each per week. Elective; open to all students.*

## PHYSIOGRAPHY.

Tarr's Physical Geography, with required reading from reference books. Laboratory work and excursions. *Fall term, Freshman year; 4 exercises per week. Required of all candidates for a degree.*

## GEOLOGY.

*Agricultural Geology.* Lectures and recitations. *Winter term of Senior year; 2 exercises per week. Required of Agricultural students, elective for mechanical students.*

## BOTANY.

I. Biology of Plants.—Comparative morphology and physiology are emphasized rather than the details of classification. Laboratory, reading and lectures. *Winter and Spring terms, Sophomore year; 4 exercises of 2 hours each per week. Required of all candidates for a degree.*

II. Systematic and Economic.—Seed-plants of economic importance are studied from fresh and preserved material. Special topics in physiology. *Fall term, Junior year; recitation, 1 exercise per week; laboratory work, 2 exercises of 2 hours each per week. Required of Agricultural students. Elective for mechanical students and specials who have taken course I.*

III. Fungi.—A study of fungi with special reference to parasitic forms of economic importance. Laboratory, reading and lectures. *Elective; open to students who have taken courses I. and II. or courses I. and V. Hours arranged with instructor.*

IV. Histology.—Laboratory, reading and lectures. The laboratory work includes methods of imbedding, sectioning, staining, and mounting. *Elective; open to students who have taken course I. Hours arranged with instructor.*

V. A study of the Spring Flora of Kingston, with practice in the identification of species. *Spring term; field and laboratory work, 1 exercise per week. Elective; open to students who have taken course I.*

#### PHYSIOLOGY.

I. Elementary Course in Human Physiology.—Lectures and recitations. Includes instruction in hygiene, and in development of observing faculties. *Winter term, Freshman year; 3 exercises per week. Spring term, Freshman year; 2 exercises per week. Required of all candidates for a degree. Elective for special students.*

II. Advanced Course.—Comparative Anatomy and Physiology. Presupposes knowledge of chemistry and animal biology. Instruction demonstrative, comparative, theoretical. *Fall term, Senior year; 4 exercises per week. Winter term; 3 exercises per week. Required of Agricultural students.*

#### ZOOLOGY.

I. Animal Biology.—*Spring term, Junior year; 3 exercises per week. Required of Agricultural students.*

II. Zoölogy.—*Fall term, Senior year; 3 exercises per week. Elective; open to students who have taken course I.*

III. Comparative Normal Histology. *Elective. Hours arranged with instructor.*

IV. Morphology of the Invertebrated Animals. *Fall term. Elective. Hours arranged with instructor.*

V. Comparative Osteology of the Vertebrated Animals. *Winter term. Elective. Hours arranged with instructor.*

VI. Comparative Embryology. *Spring term. Elective. Hours arranged with instructor.*

## VETERINARY SCIENCE.

Veterinary Science.—Theory of practice. Based on courses of comparative anatomy and physiology. *Spring term, Senior year; 4 exercises per week. Required of Agricultural students.*

## PSYCHOLOGY.

Elementary Course.—Lectures; recitations, simple laboratory experiments. *Spring term, Senior year; 3 exercises per week. Elective.*

## AGRICULTURE.

I. Agricultural Mechanics.—Similar to Mechanics XI. After the elementary mechanical exercises have been performed, carpenter-work such as would be used on the farm is taught. *Fall term, Freshman year; shop-work, 2 exercises of 3 hours per week. Carpentering and practical construction in wood. Winter term, Freshman year; shop-work, 2 exercises of three hours each per week. Required of all Freshmen.*

II. Farm Bookkeeping.—Inventory; use of day-book, cash-book, and ledger on the farm; farm accounts; accounts with stock, fields and crops; yearly statements; interest and discount. Classroom practice. *Winter term, Freshman year; 3 exercises per week. Required of all candidates for a degree.*

III. Drainage.—Drainage for Profit and Health (Waring). Sources of water; necessity of drains; kinds of drains; how drains act; how to lay out, build, and care for drains; drain tiles; cost and value of drains; sanitary effects of drainage; practice in the use of tools and instruments; details of the work. Text-book and actual practice. *Spring term, Freshman year; 2 exercises of 2 hours each per week. Required of all candidates for a degree.*

IV. Farm Crops and their Production.—Selection and preparation of soil and seed; quantity of seed; time of seeding; cultivation and harvesting of various farm crops; hay crop, its importance in agriculture; varieties of grasses; influence of time of cutting upon the value; method of storing; leguminous fodder crops; corn as a grain crop; five types of corn; corn and other crops for the silo. Other cereals—wheat, oats, barley and rye—origin, history and value; root crops—potatoes, beets, turnips, carrots and onions; miscellaneous crops—buckwheat, cabbages, pumpkins, squashes, field peas, tobacco, broom corn; weeds—injury, dissemination, and eradication. Text-book and lectures. *Fall term, Sophomore year; 2 exercises per week. Required of Agricultural students.*

V. Breeds of Live Stock.—Horses, Cattle, Sheep, and Swine (Curtis). Horses—draft, coach, saddle, thoroughbred, trotters, ponies—care and selection. Cattle—dairy, general purpose, beef-care, selection, and management. Sheep—short wool, middle wool, long wool—care, selection, and management. Swine—large breeds, medium breeds, small breeds—care, selection and management. Origin of breeds; adaptability to climates and conditions; tracing pedigrees; scoring animals. Text-book and lectures. *Fall term, Sophomore year; 3 exercises per week. Required of Agricultural students.*

VI. Agriculture (Storer). Relations of heat, air, and water to the soil; influence of soil, atmosphere, heat, light, and water upon the growth of plants; tillage and implements; natural sources of plant food; action of manures; special manures; phosphatic manures; nitrogenous compounds; green manuring; seaweeds; humus; farmyard manure; composts; modes of applying manures; night soil; history of the use of manures; potash, magnesium, lime and soda as manures; theory of rotation; irrigation; sewage; growth of crops; cereals; hay and hay-making; pastures; ensilage. Text-book. *Winter term, Junior year; 5 exer-*

*cises per week: Spring term, Junior year; 2 exercises per week. Required of Agricultural students.*

VII. Stock-breeding (Miles). Breeding as an art; heredity; normal characteristics; diseases; acquired and abnormal characteristics; atavism (reversion); law of correlation; variation; fecundity; in and in breeding; cross-breeding; relative influence of parents; sex; pedigree; animal form and index of qualities; selections; period of gestation. Text-book. *Fall term, Senior year; 3 exercises per week. Required of Agricultural students.* | ++

VIII. Feeding Animals (Stewart).—Composition of animal bodies; relative proportion of different parts of the carcass; elements of food material; digestion, its effect upon food; respiration and excretions; value of various animal manures; stock barns and their relation to the economy of feeding; principles of alimentation; early maturity; how to feed young animals; stock foods; nutritive ratio and feeding standards; definition of terms; calculation of ratios for various conditions and ages of animals; calculation of cost of rations, and their manurial value; soiling,—economy in land, fences, feed, and manure,—disadvantages, labor required; soiling crops; ensilage; economy of preserving crops in the silo; variety of crops that may be ensilaged; value of legumes and balancing rations; feeding for beef or milk; feeding horses, sheep and swine; cooked and uncooked food; cold and warm water; temperature of stables, and ventilation. Text-book. *Winter term, Senior year; 2 exercises per week. Required of Agricultural students.*

IX. Fertilizers.—Study of the composition of the various agricultural chemicals as sold in the markets; calculation of formulas for special crops; calculation and value of various home-made fertilizers. Lectures and classroom calculations. *Spring term. Senior year; 1 exercise per week. Required of Agricultural students.*

X. Dairying. American dairying (Gurler).—The dairy cow-type, breeding, and management from birth to maturity; feed and management; branches of dairy husbandry; dairy utensils; milking; care of milk; separators and butter accumulators; separating cream; ripening and churning; salting, working, packing and printing butter. The Babcock milk test of skim milk and cream; value of skim milk; building creameries. Text-book and lectures: *Winter term, Senior year; 2 exercises per week. Elective.*

XI. *Apiary work*.—Classroom work upon the habits, care and management of bees, with practical work in the apiary. *Spring term, Senior year; 1 exercise per week. Elective.*

#### HORTICULTURE.

I. Elementary Horticulture.—A general course in the study of fruits, vegetables and flowers. Plants, soils and atmospheres are used as subjects of this study, and students are required to work out common problems involved in the cultivation of garden plants. *Fall term, Junior year; 4 exercises per week. Required of Agricultural students.*

II. Olericulture.—The study of garden vegetables. *Winter term, Junior year; 2 exercises per week. Elective.*

III. Floriculture.—The study of ornamental plants. *Spring term, Junior year; 2 exercises per week. Elective.*

IV. Pomology.—The study of orchard and garden fruits. *Fall term, Senior year; 4 exercises per week. Elective.*

V. Vegetable Pathology and Garden Entomology.—The study of the diseases and insect enemies of garden plants. *Winter term, Senior year; 3 exercises per week. Required of Agricultural students.*

VI. Horticultural Literature.—*Winter term, Senior year; 2 exercises per week. Elective.*



VII. Landscape Gardening.—The study of expressions of plants, mainly of trees and shrubs, and ways of arranging them about buildings, avenues, etc., for the purpose of shelter and ornamentation. *Spring term, Senior year; 2 exercises per week. Required of Agricultural students.*

#### ENGLISH.

I. Elementary Course.—Preparatory review. Study of representative American authors. *Fall term, Freshman year; 5 exercises per week. Required of all candidates for a degree.*

II. Middle Course.—Rhetoric. Continued study of American literature. Composition. *Winter term, Freshman year; 5 exercises per week: Spring term, 4 exercises per week: Fall and Winter terms, Sophomore year; 2 exercises per week. Required of all candidates for a degree.*

III. Advanced Course.—General English literature and history. *Winter and Spring terms, Junior year; 4 exercises per week. Required of all candidates for a degree.*

IV. English Literature.—Study of special periods and authors. *Throughout the Senior year; 3 exercises per week. Elective; open to students who have taken courses I., II. and III.*

V. Orations and Essays. *Throughout the Senior year; 1 exercise per week. Elective for all Seniors.*

#### GERMAN.

I. Elementary Course.—Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the Junior year; 3 exercises per week. Required of all candidates for a degree.*

II. Middle Course.—Intermediate reading. Composition. *Fall term, Senior year; 3 exercises per week. Elective; open to students who have taken course I.*

III. Advanced Course.—German Classics. History of German literature. *Winter and Spring terms, Senior year; 3 exercises per week. Elective; open to students who have taken courses I. and II.*

IV. Scientific German. *Winter and Spring terms, Senior year; 2 exercises per week. Elective; open to students who have taken courses I. and II.*

V. Reading at Sight. *Throughout the Senior year; 1 exercise per week. Elective; open to students who have taken courses I. and II.*

#### FRENCH.

I. Elementary Course.—Grammar, dictation, conversation, reading of easy prose and poetry. *Throughout the Sophomore year; 3 exercises per week. Required of all candidates for a degree.*

II. Middle Course.—Intermediate reading. Composition. *Throughout the Junior year; 3 exercises per week. Elective; open to students who have taken course I.*

III. Advanced Course.—French classics. History of French literature. *Throughout the Senior year; 3 exercises per week. Elective; open to students who have taken courses I. and II.*

IV. Scientific French. *Throughout the Senior year; 2 exercises per week. Elective; open to students who have taken courses I. and II.*

V. Reading at Sight. *Throughout the Senior year; 1 exercise per week. Elective; open to students who have taken courses I. and II.*

#### LATIN.

I. Beginner's Latin Book. Grammar. *Throughout the Freshman year; 3 exercises per week. Elective.*

II. Cæsar. Composition. *Throughout the Sophomore year; 3*

*exercises per week. Elective; open to students who have taken course I.*

III. Cicero. Composition. *Throughout the Junior year; 3 exercises per week. Elective; open to students who have taken courses I. and II.*

IV. Virgil. Composition. *Throughout the Senior year; 3 exercises per week. Elective; open to students who have taken courses I., II. and III.*

#### EXPRESSION.

I. Elementary work in reading.—Elements of speech, articulation, and sight reading. *Throughout the Freshman year; 1 exercise per week. Required of all candidates for a degree.*

II. Reading.—The cultivation of ease and naturalness. Study of narrative poetry and prose. *Throughout the Sophomore year; 1 exercise per week. Elective.*

III. Reading and recitations.—Study of various forms of poetry and prose. Extemporaneous speaking required during the Spring term. *Throughout the Junior year; 1 exercise per week. Elective.*

IV. Reading.—Shakespeare. Two extemporaneous speeches and one original oration required each term. One public debate during the year. *Throughout the Senior year; 1 exercise per week. Elective.*

#### HISTORY.

I. American History. *Fall term, Freshman year; 2 exercises per week. Required of all candidates for a degree.*

II. General History. *Winter and Spring terms, Freshman year; 2 exercises per week. Required of all candidates for a degree.*

III. English History and English Literature.—(Same as English 3). *Winter and Spring terms, Junior year; 4 exercises per week. Required of all candidates for a degree.*

IV. Special Work for Individual Students. *Spring term, Senior year; 3 exercises per week. Elective; open to students who have taken courses I., II. and III.*

#### POLITICAL SCIENCE.

I. Science of Government.—Town, County, State, and United States. Their origin, development, and practices. Critical analysis of the Constitution of the United States. Lectures, recitations and discussions. *Fall term, Senior year; 4 exercises per week. Elective.*

II. Political Economy.—Elementary course. Based on Walker's Briefer Course, and Andrews' Institutes of Economics. Lectures, recitations, discussions, readings, original problems, citations from the daily press, and essays. *Winter term, Senior year; 4 exercises per week. Elective.*

#### MATHEMATICS.

I. Algebra (Wells).—The fundamental operations, addition, subtraction, multiplication, division, of algebraic quantities; factoring and its applications; the solution of simple equations with one or more unknown quantities; involution; evolution; the theory of exponents; the solution of radical and quadratic equations; arithmetical and geometrical progression; the binomial theorem. *Freshman year; 5 exercises per week, Fall and Winter terms; 3 exercises per week, Spring term. Required of all candidates for a degree.*

II. Plane Geometry (Wells).—Rectilinear figures; the circle; measurements of angles; the theory of proportion; similar figures; regular polygons; areas of polygons; the measurement of the circle; original demonstrations. *Spring term, Freshman year; 4 exercises per week. Fall term, Sophomore year; 5 exercises per week. Required of all candidates for a degree.*

III. Plane Trigonometry (Jones).—The derivation of the fundamental formulas; logarithms; the solution of right and oblique triangles; practical problems. *Winter term, Sophomore year; 3 exercises per week. Required of all candidates for a degree.*

IV. Solid Geometry (Wells).—Lines and planes in space; dihedral angles; polyhedral angles; polyhedrons; the cylinder, cone and sphere; measurement of the cylinder, cone and sphere; numerical examples and original demonstrations. *Spring term, Sophomore year; 3 exercises per week. Required of students in the Mechanical course.*

V. Analytical Geometry (Hardy).—Coördinate systems; the point; the line; relation between different coördinate systems; the equation of the first degree, the straight line; the equation of the second degree, the conic sections; higher plane curves. *Fall and Winter terms, Junior year; 4 exercises per week. Required of students in the Mechanical course.*

VI. Calculus (Osborne).—The differentiation of algebraic, trigonometric, logarithmic, exponential and anti-trigonometric functions. Integration of fundamental forms; definite integrals; applications to geometry and mechanics; successive differentiation; successive integration with applications; evaluation of indeterminate forms; the development of functions in series; maxima and minima; change of the independent variable; integration of rational fractions; integration by rationalization; integration by parts and by series; curve tracing. *Winter and Spring terms, Junior year, and Fall term of Senior year; 3 exercises per week. Required of students in the Mechanical course.*

VII. Higher Algebra (Taylor).—The theory of limits; differentiation; development of functions in series; permutations and combinations; probability; *Fall term; 2 exercises per week. Elective; open to students who have completed course I.*

VIII. Curve tracing. Lecture course. The construction and elementary properties of simple plane curves; symmetry; diam-

eters ; limits ; asymptotes. *Winter term ; 1 exercise per week. Elective ; open to students who have completed courses I. and II.*

IX. Synthetic Geometry (Dupuis).—The point, line, and circle ; comparison and measurement of areas ; proportion amongst line segments ; collinearity ; inversion ; anharmonic division ; homography. *Spring term ; 3 exercises per week. Elective ; open to students who have completed courses I. and II.*

X. Spherical and Higher Plane Trigonometry—(Chauvenet).—The derivation and application of the fundamental formulas ; trigonometric series ; the construction of trigonometric tables. *Winter term, 3 exercises per week. Elective ; open to students who have completed courses I., II., III. and IV.*

XI. Theory of Equations with Determinants. Lecture course, with reference reading. *Fall term ; 3 exercises per week. Elective, open to students who have completed course VII.*

XII. Advanced Calculus (Byerly).—An extension of course 10, including a further discussion of definite integrals ; imaginaries, length of curves, areas, volumes, the elements of elliptic integrals, and of the theory of functions. *Winter and spring terms ; 3 exercises per week. Elective ; open to students who have completed course VI.*

XIII. Analytical Mechanics.—(Same as Mechanics 21). *Spring term ; 3 exercises per week. Elective ; open to students who have completed one term of course VI.*

XIV. Solid Analytical Geometry (Smith).—Theorems on the plane and the surfaces of the second degree. *Winter and spring terms ; 3 exercises per week. Open to students who have completed course XI.*

#### ASTRONOMY.

I. Physical Astronomy.—Lecture course, illustrated with copious lantern slides, observations with a four inch telescope, and laboratory work with the sun spectrum and the spark spec-

trum sufficient to give an insight into modern methods of astronomical work. *Winter term, Senior year; 2 exercises per week. Elective; open to all Seniors.*

II. Practical Astronomy.—The use of instruments; the determination of time, of latitude, of longitude. *Spring term, Senior year; 2 exercises per week. Elective; open to Mechanical Seniors.*

#### CIVIL ENGINEERING.

I. Drainage Leveling.—Drawing contour lines, leveling, setting grade stakes, laying tiles and other work connected with Agriculture III. *Spring term, Freshman year; 2 exercises of two hours each per week. Required of all candidates for a degree.*

II. Plane Surveying (Carhart).—Elementary course, field work, recitation and plotting. Use of compass, transit and levels; adjustment of instruments; stadia surveying. *Spring term, Sophomore year; 1 exercise per week of class-room work, 2 exercises of three hours each of field work per week. Required of Agricultural students.*

III. Road Construction and Leveling (Spalding).—Location and construction of roads; mechanical structures; earth, gravel, broken stone, paved and macadam roads. *Fall term, Junior year; 3 exercises of text-book work and 1 exercise of three hours of field work per week. Required of students in the Agricultural course.*

IV. Civil Engineering.—A continuation of course II., embracing land, topographic and railroad surveying, the study of the use of engineer's tables and practice in overseeing under-classmen beginning the subject. *Fall and Spring term; 2 exercises of two hours each week. Elective; open to students who have completed course II.*

#### BOOKKEEPING.

I. Bookkeeping (Bryant and Stratton).—Explanation of commercial terms; single entry; double entry; use of books,—day-

book, cash-book, journal and ledger ; practical exercises ; original accounts ; farm accounts ; mechanic's accounts ; inventory ; statements ; partnership ; interest ; discount ; exercise in commercial forms—bills, receipts, checks, notes, orders, drafts. *Winter term, Freshman year ; 1 lecture and 2 exercises of two hours each per week. Required of all candidates for a degree.*

### MECHANICS.

I. Strength of Materials (Merriman).—Strength of wood, steel, alloys, stone, brick and cements. *Spring term, Junior year ; recitations, 3 exercises per week, laboratory work, 1 exercise of 2 hours per week. Required of Mechanical students.*

II. Mechanism (Stahl & Woods).—Rectilinear motion ; rotary motion ; transmission of motion. *Spring term, Junior year ; 2 exercises per week. Required of Mechanical students.*

III. Mechanics of Engineering (Church).—Bodies in equilibrium and in motion ; work and power ; friction of rest and motion ; strength of simple beams, continuous beams, pipes and columns, arches. Recitations. *Fall term, Senior year ; 5 exercises per week ; Winter term, Senior year ; 4 exercises per week. Graphic statics, hydraulics and water-wheels. Spring term, Senior year ; 5 exercises per week. Required of Mechanical students.*

IV. Steam Engineering (Kinealy).—Study of steam and its properties ; simple and compound engines ; steam boilers. *Fall term, Senior year ; 3 exercises per week. Elective.*

V. Metallurgy (Bloxam).—Study of the manufacture of cast iron, wrought iron, and steel ; rolling-mill machinery ; metallurgy of copper, tin, zinc, and silver ; alloys. *Winter term, Senior year ; 3 exercises per week. Elective.*

VI. Mechanical Drawing. *Winter term, Sophomore year ; 1 exercise of 2 hours per week. Required of Agricultural students.*



VII. Mechanical Drawing (Anthony). *Throughout the Sophomore year; 2 exercises of 2 hours each per week. Required of Mechanical students.*

VIII. Mechanical Drawing. *Throughout the Junior year; 2 exercises of 2 hours per week. Required of Mechanical students.*

IX. Mechanical Drawing.—Machine drawing and design. *Fall and Winter terms, Senior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

X. Descriptive Geometry (Faunce).—Notation and elementary principles; problems on the point, line and plane; problems relating to the cylinder, cone and double curved surface of revolution; intersection and development of planes and solids; practical problems. *Fall term, Junior year; 3 exercises per week. Required of Mechanical students.*

XI. Wood-working.—Use of tools, bench work and carpentering. *Fall term, Freshman year; shop-work, 2 exercises of 3 hours each per week. Required of all candidates for a degree.*

XII. Wood-turning. *Fall term, Sophomore year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

XIII. Forging. *Fall term, Sophomore year; shop-work, 1 exercise of 3 hours per week. Required of Agricultural students.*

XIV. Wood-carving.—Care and use of tools, geometrical motives, diaper patterns, incised carving, flat and curved surface carving, historic ornament, low relief and high relief. *Elective throughout the course, 1 exercise of 3 hours per week.*

XV. Iron-work.—Forging, drawing, bending, welding and tool dressing. *Winter term, Sophomore year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

XVI. Constructions, and Estimates of Cost. *Winter term, Sophomore year; shop-work and lectures, 2 exercises of 2 hours each per week. Required of Agricultural students.*

XVII. Pattern-making.—Principles of moulding and casting. *Spring term, Sophomore year; shop-work, 1 exercise of 3 hours per week. Required of Mechanical students.*

XVIII. Machine-shop Practice. *Fall term, Junior year; shop-work, 2 exercises of 3 hours per week. Required of Mechanical students.*

XIX. Machine-shop Practice. *Winter and Spring terms, Junior year; 1 exercise of 3 hours per week. Required of Mechanical students.*

XX. Machine Construction. *Throughout the Senior year; shop-work, 2 exercises of 3 hours each per week. Required of Mechanical students.*

XXI. Analytical Mechanics (Same as Mathematics XIII). *Spring term, Junior year. Elective; open to students who have completed one term of Mathematics VI.*

XXII. Engineering Conferences.—Subjects chosen by the class. *Spring term, Senior year; 2 exercises per week. Required of Mechanical students.*

#### DRAWING AND MODELING.

I. Freehand Drawing.—Drawing in charcoal from objects and still life. Special attention given to values. Memory sketches required. *Spring term, Freshman year; 2 exercises of two hours each. Required of all candidates for a degree.*

II. Drawing from the cast in charcoal.—Memory sketches required. *Fall term, Sophomore year; 1 exercise of two hours per week. Required of all candidates for a degree.*

III. Drawing from life or the cast. Painting in oil, pastel or water color. *Elective; open to students who have taken courses I. and II.*

IV. Modeling in clay from simple objects and casts. *Fall term, Sophomore year; 1 exercise of 2 hours per week. Required of Agricultural students.*

#### MILITARY DRILL AND TACTICS.

I. Infantry Drill.—School of the soldier. School of the company. School of the battalion and small-arm target practice. *Throughout the course, 3 exercises per week.*

II. Artillery Drill.—School of the soldier dismounted. Sabre exercise and target practice. School of the battery dismounted for selected detachments. Students in course 2 are selected by the commandant from those reasonably proficient in course I.

III. Military Science. *Lectures given in Winter term.*

IV. Signal Drill.—With flags, torches, and telegraphic instruments, according to the United States Signal code.

## COURSE OF STUDY

OF THE

# R. I. College of Agriculture and Mechanic Arts.

### FRESHMAN YEAR.

#### FALL TERM.

	Exercises per week.			Exercises per week.
Physiography, I.....	4	Mathematics, I.....		5
English, I.....	5	Agriculture, I. or .....	}	2
History, I.....	2	Mechanics, XI.....		
Expression, I.....	1	Military Drill and Tactics.....		3

**Electives**—Latin, I.    Mechanics, XIV.

#### WINTER TERM.

Physiology, I.....	3	Mathematics, I.....		1
English, II.....	5	Book-keeping, I.....		3
History, II.....	2	Mechanics, XI.....		2
Expression, I.....	1	Military Drill and Tactics, I.....		3

**Electives**—Latin, I.    Mechanics, XIV.

#### SPRING TERM.

Physiology, I.....	2	Mathematics, I.....		3
English, II.....	4	Mathematics, II.....		4
History, II.....	2	Agriculture, III. or .....	}	2
Expression, I.....	1	Civil Engineering, I.....		
Drawing, I.....	2	Military Drill and Tactics, .....		3

**Electives**—Latin, I.    Mechanics, XIV.

## SOPHOMORE YEAR.

## FALL TERM.

Agricultural Course.		Mechanical Course.	
	Exercises per week.		Exercises per week.
Physics, I.....	4	Physics, I.....	4
Agriculture, IV.....	2	English, II.....	2
Agriculture, V.....	3	French, I.....	3
English, II.....	2	Mathematics, II.....	5
French, I.....	3	Mechanics, VII.....	2
Mathematics, II.....	5	Mechanics, XII.....	2
Mechanics, XIII.....	1	Drawing, II.....	1
Drawing, II.....	1	Military Drill and Tactics, I.....	3
Modeling, IV.....	1		
Military Drill and Tactics, I.....	3		

\* **Electives**—Latin, II. Mathematics, VII. Mechanics, XIV. Expression, II.

## WINTER TERM.

Physics, I.....	4	Physics, I.....	4
Botany, I.....	4	Botany, I.....	4
English, II.....	2	English, II.....	2
French, I.....	3	French, I.....	3
Mathematics, II.....	3	Mathematics, III.....	3
Mechanics, VII.....	1	Mechanics, VII.....	2
Mechanics, XVI.....	2	Mechanics, XV.....	2
Military Drill and Tactics, I.....	3	Military Drill and Tactics, I.....	3

**Electives**—Latin, II. Mechanics, XIV. Expression, II. Mathematics, VIII.

## SPRING TERM.

Chemistry, I.....	4	Chemistry, I.....	4
Physics, I.....	4	Physics, I.....	4
Botany, I.....	4	Botany, I.....	4
French, I.....	3	French, I.....	3
Civil Engineering, II.....	3	Mathematics, IV.....	3
Military Drill and Tactics, I.....	3	Mechanics, VII.....	2
		Mechanics, XVIII.....	1
		Military Drill and Tactics, I.....	3

**Electives**—Latin, II. Mathematics, IX. Mechanics, XIV. Drawing, III. Expression, II. Physics, IV.

\* A student may elect work offered to a lower class or to the other division of his own class.

JUNIOR YEAR.

FALL TERM.

Agricultural Course.		Mechanical Course.	
	Exercises per week.		Exercises per week.
Chemistry, II	3	Chemistry, II	3
Chemistry, III	2	Chemistry, III	2
German, I	3	German, I	3
Civil Engineering, III	4	Mathematics, V	4
Botany, II	3	Mechanics, X	3
Horticulture, I	4	Mechanics, VIII	2
Military Drill and Tactics, I	3	Mechanics, XVIII	2
		Military Drill and Tactics, I	3

**Electives**—Physics, II. French, II. Latin, III. Mechanics, XIV. Drawing, III. Expression, III.

WINTER TERM.

Chemistry, III	2	Chemistry, III	2
Chemistry, IV	4	English, III	4
English, III	4	German, I	3
German, I	3	Mathematics, V	4
Agriculture, VI	5	Mathematics, VI	3
Military Drill and Tactics, I	3	Mechanics, VIII	2
		Mechanics, XIX	1
		Military Drill and Tactics, I	3

**Electives**—Physics, II. Botany, III., IV. Horticulture, II. French, II. Latin, III. Mechanics, XIV. Military Drill and Tactics, III. Expression, III. Mathematics, X.

SPRING TERM.

English, III	4	English, III	4
German, I	3	German, I	3
Chemistry, VI	3	Mathematics, VI	3
Chemistry, VII	2	Mechanics, VIII	2
Zoölogy, I	4	Mechanics, II	2
Agriculture, VI	2	Mechanics, I	4
Military Drill and Tactics, I	3	Mechanics, XIX	1
		Military Drill and Tactics, I	3

**Electives**—Physics, II., IV. Botany, III., IV., V. Horticulture, III. French, II. Latin, III. Mechanics, XIV. Drawing, III. Expression, III. Mathematics, XIII.

## \* SENIOR YEAR.

## FALL TERM.

Agricultural Course.		Mechanical Course.	
	Exercises per week.		Exercises per week.
Chemistry, V.....	2	Mathematics, VI.....	3
Physiology, II.....	4	Mechanics, III.....	5
Agriculture, VII.....	3	Mechanics, XX.....	2
Military Drill and Tactics, I.....	3	Mechanics, IX.....	1
		Military Drill and Tactics.....	3

**Electives**—Chemistry, V., VIII. Physics, II. Botany, III., IV. Horticulture, IV. English, IV., V. German, II., V. Latin, IV. French, III., IV., V. Political Science, I. Mathematics, XI. Mechanics, IV., XIV. Drawing, III. Zoölogy, II., III., IV. Expression, IV. Civil Engineering, IV.

## WINTER TERM.

Physiology, II.....	3	Mechanics, III.....	4
Geology, I.....	2	Mechanics, IX.....	1
Agriculture, VIII.....	2	Mechanics, XX.....	2
Horticulture, V.....	3	Military Drill and Tactics, I.....	3
Military Drill and Tactics, I.....	3		

**Electives**—Chemistry, VIII., IX. Physics, II. Botany, III., IV. Agriculture, X. Horticulture, VI. English, IV., V. German, III., IV., V. Latin, IV. French, III., IV., V. Political Science, II. Mathematics, XII., XIV. Mechanics, V., XIV. Military Drill and Tactics, III. Psychology, I. Expression, IV. Zoölogy, III., V.

## SPRING TERM.

Veterinary Science, I.....	4	Mechanics, III.....	5
Agriculture, IX.....	1	Mechanics, XX.....	2
Horticulture, VII.....	2	Mechanics, XXII.....	2
Military Drill and Tactics, I.....	3	Military Drill and Tactics, I.....	3

**Electives**—Chemistry, VIII., IX. Physics, II., III., IV. Botany, III., IV., V. Agriculture, XI. English, IV., V. German, III., IV., V. Latin, IV. French, III., IV., V. History, IV. Mathematics, XII., XIV. Astronomy, I., II. Mechanics, XIV. Drawing, III. Expression, IV. Civil Engineering, IV. Zoölogy, III., IV.

---

\* The equivalent of 15 hours of recitation per week is required.

# THE COURSES OF STUDY

TO BE ADOPTED IN 1898.

## PREPARATORY.\*

FALL TERM.	WINTER TERM.	SPRING TERM.
English Grammar..... 5	Lockwood's Lessons in English..... 5	Lockwood's Lessons in English..... 5
Elementary French..... 3	Elementary French..... 3	Elementary French..... 3
American History..... 3	American History..... 3	American History..... 3
Plane Geometry..... 5	Algebra..... 5	Algebra..... 5
	Physiology..... 3	Physiology..... 2

\*Students entering the preparatory department, which will open in 1898, may take, together with the regular studies of this course, any other work from the college courses for which they are prepared, and which is possible with the arranged schedules.

## FRESHMAN.

### FALL TERM.

Physiography.....	4
Elementary Physics.....	4
College Algebra.....	4
Rhetoric.....	2
French or German.....	3
Freehand Drawing.....	1
Sketch Class (elective).....	1

### WINTER TERM.

Agricultural Course.	Mechanical Engineering, and Physical and Mathematical Courses.	Chemical, Biological, and Preparatory Medical Course.
Elementary Physics..... 3	Elementary Physics..... 3	Elementary Physics..... 3
Plane Trigonometry..... 3	Plane Trigonometry..... 3	Plane Trigonometry..... 3
Rhetoric..... 2	Rhetoric..... 2	Rhetoric..... 2
French or German..... 3	French or German..... 3	French or German..... 3
Biology of Plants..... 3	Mechanical Drawing..... 1	Biology of Plants..... 3
Agricultural Mechanics..... 2	Woodworking..... 3	Elective..... 3

### SPRING TERM.

Elementary Physics..... 3	Elementary Physics..... 3	Elementary Physics..... 3
Solid Geometry..... 3	Solid Geometry..... 3	Solid Geometry..... 3
Rhetoric..... 2	Rhetoric..... 2	Rhetoric..... 2
French or German..... 3	French or German..... 3	French or German..... 3
Biology of Plants..... 3	Mechanical Drawing..... 2	Biology of Plants..... 3
Agriculture I: introduction to Agriculture..... 2	Woodturning and Pattern-making..... 3	Elective..... 3

A *General Course* will be arranged later.



## SOPHOMORE.

## FALL TERM.

Agricultural Course.	Mechanical Course.
Chemistry..... 4	Chemistry..... 4
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 3
Plane Surveying..... 3	Analytical Geometry..... 4
Botany: weeds and fodder plants..... 3	Mechanical Drawing..... 2
Agriculture II and III: soils, irrigation and drainage..... 2	Moulding..... 2

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing, 1.

## WINTER TERM.

Chemistry..... 5	Chemistry..... 5
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 3
Animal Biology..... 3	Analytical Geometry..... 4
Agriculture IV: agricultural apparatus and constructions..... 3	Mechanical Drawing..... 1
	Forging..... 2

Electives open to all courses—Photography, 1; Synthetic Geometry, 3.

## SPRING TERM.

Chemistry..... 3	Chemistry..... 3
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 3
Theoretical Chemistry..... 3	Descriptive Geometry..... 3
Animal Biology..... 3	Mechanical Drawing..... 2
Agriculture V: fertilization..... 2	Applied Electricity..... 3
Surveying: leveling and topographical..... 2	Surveying: leveling and topographical..... 2

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3; Spherical and Higher Plane Trigonometry, 3.

A *General Course* will be arranged later.

SOPHOMORE.—*Continued.*

## FALL TERM.

Physical and Mathematical Courses.	Chemical, Biological, and Preparatory Medical Courses.
Chemistry..... 4	Chemistry..... 4
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 2
Analytical Geometry..... 4	Biology of Plants..... 3
Advanced Physics: thermometry, thermodynamics, sound and telephony..... 3	Elective..... 6

Electives open to all courses\*—Free-hand Drawing, 4; Sketch Class, 1; Curve Tracing, 1.

## WINTER TERM.

Chemistry..... 5	Chemistry..... 5
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 3
Analytical Geometry..... 4	Animal Biology..... 3
Advanced Physics: optical phenomena and instruments..... 3	Elective..... 3

Electives open to all courses—Photography, 1; Synthetic Geometry, 3.

## SPRING TERM.

Chemistry..... 3	Chemistry..... 3
Advanced English..... 2	Advanced English..... 2
German or French..... 3	German or French..... 3
Descriptive Geometry..... 3	Animal Biology..... 3
Advanced Physics: electricity and magnetism..... 3	Theoretical Chemistry..... 3
Theoretical Chemistry..... 3	Inorganic Preparations..... 3
Elective..... 3	Elective..... 3

Electives open to all courses—Free-hand Drawing, 1; Sketch Class, 1; Photography, 3; Spherical and Higher Plane Trigonometry, 3.

A *General Course* will be arranged later.

\* Other electives will be arranged for each course.

## JUNIOR.

## FALL TERM.

Agricultural Course.	Mechanical Course.
Organic Chemistry..... 3	General English Literature and History.... 2
General English Literature and History.... 2	Analytical Chemistry..... 2
Analytical Chemistry..... 3	Calculus..... 3
Zoölogy..... 3	Mechanical Drawing..... 2
Horticulture I: field and garden crops.... 3	Machine Shop..... 3
Volumetric Analysis..... 3	Elective..... 3
Elective..... 3	(Metallurgy, Mechanism).
Economic Fungi..... 3	
(required in alternate years).	

Electives open to all courses\*—Free-hand Drawing, 4; Sketch Class, 1 or 2; Modeling, 2.

## WINTER TERM.

General English Literature and History.... 2	General English Literature and History.... 2
Comparative Anatomy..... 2	Calculus..... 3
Agricultural Chemistry..... 3	Machine Design..... 2
Quantitative Analysis: gravimetric and volumetric..... 3	Machine Shop..... 3
Horticulture II: market-gardening and greenhouse..... 3	Thermo-dynamics and Steam-engine..... 3
Elective: III, plant breeding, 1; IV, forestry, 2..... 3	Elective..... 3

Elective open to all courses—Solid Analytical Geometry, 3.

## SPRING TERM.

General English Literature and History.... 2	General English Literature and History.... 2
Comparative Anatomy..... 2	Calculus..... 3
Agricultural Chemistry..... 3	Machine Design..... 2
Horticulture V: pomology..... 3	Machine Shop..... 3
Horticulture VI: ornamental gardening... 3	Engineering Laboratory..... 1
Horticulture VII: floriculture..... 3	Steam Boilers..... 2
	Elective..... 3
	(Surveying, Photography, Materials of Construction).

Electives open to all courses—Free-hand Drawing, 4; Sketch Class, 1 or 2; History of Art, 1; Analytical Mechanics, 3.

A *General Course* will be arranged later.

\* Other electives will be arranged for each course.

## JUNIOR.—Continued.

## FALL TERM.

Physical and Mathematical Courses.	Chemical Course.	Biological and Preparatory Medical Course.
General English Literature and History ..... 2	Organic Chemistry ..... 3	Organic Chemistry ..... 3
Analytical Chemistry..... 2	General English Literature and History..... 2	Zoölogy ..... 3
Advanced Physics: electrical measurements and testing of instruments ..... 3	Analytical Chemistry..... 3	General English Literature and History..... 2
Calculus..... 3	Volumetric Analysis ..... 2	Analytical Chemistry..... 3
Elective..... 6	Elective..... 6	Volumetric Analysis ..... 3
		Elective ..... 3 (Scientific French or German)

Given in alternate years—Economic Fungi (exclusive of bacteria), 3;  
Bacteriology, 3.

## WINTER TERM.

General English Literature and History..... 2	Organic Chemistry ..... 3	General English Literature and History..... 2
Calculus..... 3	General English Literature and History..... 2	Comparative Anatomy..... 2
Advanced Physics: direct current, construction of dynamos and motors, tests of efficiency..... 3	Sanitary Chemistry..... 3	Sanitary Chemistry..... 3
Elective..... 8	Quantitative Analysis (gravimetric)..... 3	Quantitative Analysis..... 3
	Mineralogy and blowpipe..... 3	Organic Chemistry ..... 3
	Elective..... 3	Elective ..... 3 (Scientific French or German)

Elective open to all courses\*—Solid Analytical Geometry, 3.

## SPRING TERM.

General English Literature and History ..... 2	General English Literature and History..... 2	General English Literature and History ..... 2
Advanced Physics; alternating current, manipulation of alternators, transformers..... 3	Organic Chemistry..... 3	Comparative Anatomy..... 2
Calculus..... 3	Industrial Chemistry ..... 3	Comparative Invertebrate Zoölogy..... 3
Elective..... 8	Quantitative Analysis (gravimetric)..... 3	Elective ..... 12 (Scientific French or German, 3; Organic Chemistry, 3).
	Elective..... 3	

A *General Course* will be arranged later.

\*Other electives will be arranged for each course.

## SENIOR.

## FALL TERM.

Agricultural Course.	Mechanical Course.
Veterinary Science..... 3	Applied Mechanics..... 5
Agricultural Chemistry..... 3	Steam Engine Design..... 3
Agriculture VI: Breeds of farm animals... 3	Engineering Laboratory..... 3
VII: Live stock husbandry.... 3	Power Transmission..... 3
VIII: History of agriculture, (elective)..... 2	Chemical Engineering..... 3
Economic Fungi..... 3 (required in alternate years.)	

Electives open to all courses\*—Free-hand Drawing, 4; Argumentation, 2; Advanced English Literature, 3; Modeling, 2; Sketch Class, 1 or 2; Orations and Essays, 1.

## WINTER TERM.

Agricultural Chemistry..... 3	Applied Mechanics..... 5
Agriculture IX: Feeding farm animals.... 3	Steam Engine Design..... 3
X: Dairy husbandry..... 3	Engineering Laboratory... .. 3
XI: Poultry farming..... 2	Wool and Cotton Machinery..... 3
XII: Agricultural economics.. 2	Specifications and contracts..... 3
XIII: Agricultural and horti- cultural literature... 2	Inspection excursions.
	Thesis work.

Electives open to all courses\*—Solid Analytical Geometry, 3; Advanced English Literature, 3; Orations and Essays, 1.

## SPRING TERM.

Agricultural Chemistry..... 3	Hydraulics..... 5
Economic Entomology..... 2	Mill and factory designs..... 3
Agriculture XIV: Farm management..... 5	Engineering Laboratory..... 3
XV: Farm accounts and records 1	Wool and cotton machinery..... 3
XVI: Farm law..... 1	Specifications and contracts..... 3
XVII: Apiculture..... 1	Inspection excursions.
XVIII: Agricultural debate... 2	Thesis work.
XIX: Agricultural experimen- tation..... 2	

Electives open to all courses\*—Free-hand Drawing, 4; Sketch Class, 1 or 2; History of Art, 1; Analytical Mechanics, 3; Orations and Essays, 1; Advanced English Literature, 3.

A *General Course* will be arranged later.

\*Other electives will be arranged for each course.

SENIOR.—Continued.

FALL TERM.

Physical and Mathematical Courses.	Chemical Course.	Biological and Preparatory Medical Course.
Projective Geometry..... 3	Organic Chemistry..... 3	+ Bacteriology..... 3
Advanced Physics: wiring of buildings, switch-boards, systems of regulation, subways..... 3	Textile Coloring..... 3	Civil Government..... 3
Integral Calculus..... 3	Agricultural Chemistry..... 3	Scientific French or German 3
Modern Methods in Analyt-ics..... 3	Gas Analysis..... 3	Organic Chemistry..... 3
Heating and Ventilation of Buildings..... 3	Physiological Chemistry.... 3	Physiological Chemistry.... 3
Thesis work.	Thesis work.....	Elective..... 3
		+ If not taken the previous year.

Given in alternate years\*—Economic Fungi (exclusive of bacteria), 3; Bacteriology, 3.

WINTER TERM.

Differential Equations..... 3	Organic Chemistry..... 3	Psychology..... 3
Theory of Functions..... 3	Textile Coloring..... 3	Organic Chemistry..... 3
Theory of Equations..... 3	Agricultural Chemistry..... 3	Physiological Chemistry.... 3
Advanced Physics: photo-metric and electric tests of lamps, safety and distrib-uting devices..... 3	Physiological Chemistry.... 3	Elective..... 9
Inspection excursions.	Electro-Chemistry..... 3	
Thesis work.	Thesis work.	

Electives open to all courses—Solid Analytical Geometry, 3; Advanced English Literature, 3; Orations and Essays, 1.

SPRING TERM.

Differential Equations..... 3	Organic Chemistry..... 3	Economic Entomology, elect-ive..... 2
Theory of Functions..... 3	Textile Fabrics and Ma-chinery, with excursions to manufactories..... 3	Organic Chemistry..... 3
Theory of Equations..... 3	Agricultural Chemistry..... 3	Physiological Chemistry.... 3
Methods of Teaching Math-ematics..... 1	Physiological Chemistry.... 3	Elective..... 12
Advanced Physics; traction work and transmission of power..... 3	Thesis work.	(In Botany and Zoölogy in-dividual arrangements are to be made with heads of depart-ments.)
Inspection excursions.		
Thesis work.		

A *General Course* will be arranged later.

\* Other electives will be arranged for each course.

## AGRICULTURE.

## COURSE PROPOSED FOR 1898.

I. Introduction.—Definition of terms; origin and necessity of agriculture; relations of agriculture to other industries; agriculture as an occupation; education for agriculture; the atmosphere and sunshine in relation to agriculture; plant and animal life in agriculture. *Spring term, Freshman year; lectures and recitations, 2 exercises per week. Required of Agricultural students.*

II. Soils.—The origin, formation, and deposition of soils are studied under physiography; the composition, mechanical and chemical analysis under agricultural chemistry; the physical properties and relations under soil-physics. Agricultural Soils.—Function; variation; classification; adaptation; location; examination; faults; improvement and preparation; clearing land; grading; mixing soils; paring and burning; reclaiming land; tillage; irrigation.

III. Land Drainage (Waring).—Sources of water; necessity of drainage; kinds of drains; action of drains; planning system of drainage; drain tiles; construction and care of drains; cost and value of drains; sanitary effects of drainage. *Recitations and practice II. and III. Fall term, Sophomore year; lectures and recitations, 2 exercises per week. Required of Agricultural students.*

IV. Agricultural Apparatus and Constructions.—Farm tools; implements; machines and vehicles; farm buildings; fences; roads and bridges—arrangement, construction, care and maintenance. *Winter term, Sophomore year; lectures, 3 exercises per week. Required of Agricultural students.*

V. Fertilization (Storer's Agriculture).—Introduction; classification of manures, atmospheric, mineral and organic; manurial sources of potash, lime, magnesia, soda, iron, phosphates and nitrogen salts; stable-manure, composition and management;

animal manures; liquid manure; farm sewage; guanos; fish fertilizers; animal refuse; peat; green manuring; sea-weeds; vegetable refuse and by-products; composts; divisors for manures; application and action of manures; valuation of manures. *Spring term, Sophomore year; lectures and text-book, 2 exercises per week. Required of Agricultural students.*

VI. Breeds of Farm Animals.—Origin, history, characteristics and adaptability of the leading breeds of the horse, neat cattle, sheep, swine and poultry; scoring; tracing pedigrees; breeders' associations. *Fall term, Senior year; 3 exercises per week. Elective.*

VII. Live Stock Husbandry.—The principles of breeding; heredity; atavism; correlation; variation; fecundity; in-breeding; cross-breeding; relative influence of parents; sex; pedigree; form; selection; the breeding, care and management of the horse, neat cattle, sheep, swine and poultry. *Fall term, Senior year; 3 exercises per week. Elective.*

VIII. History of Agriculture.—Agriculture in relation to civilization; fisher and hunter-folk; nomads; tillers of the soil; development of tillage; history of the plow; crop rotation; irrigation; fertilization; general and special farming; agricultural education; agricultural experimentation; evolution of farming implements; the farm and the farmer to-day. *Fall term, Senior year; lectures, 2 exercises per week. Elective by special arrangement with the Professor of Agriculture.*

IX. Feeding of Farm Animals.—Principles of rational feeding; animal body, composition, processes of digestion, assimilation, and excrementation; feeding stuffs, composition and digestibility; nutrients; feeding standards; formulating rations; selection of feeding stuffs; preparation of food; methods of feeding; utility of shelter; special feeding of horse, cow, sheep, swine and poultry, and for work, flesh, milk, wool, eggs, etc. *Winter term, Senior year; lectures, 3 exercises per week. Elective.*



X. Dairy Husbandry.—Breeds and breeding of dairy cattle; barns and dairy buildings; milk production, composition; management, æration, pasteurization, sterilization, testing, preservation, transportation and marketing; creaming; butter-making; cheese-making; milk-preservation, condensed milk, milk-sugar, etc.; milk-preparation for infants and invalids; dairy bacteriology. *Winter term, Senior year; lectures, 3 exercises per week. Elective.*

XI. Poultry Farming.—Domestic fowls, kinds, breeds, selection and breeding; buildings, location and arrangement, construction and furnishing, ventilation, yards and parks; foods and feeding, care and management, production of eggs and flesh, fattening; dressing and marketing; incubation, natural and artificial; brooders; diseases and enemies; caponizing; exhibiting and judging; special management of turkeys, geese, ducks and pigeons. *Winter term, Senior year; lectures, 2 exercises per week. Elective.*

XII. Agricultural Economics.—The mutual relations of agriculture and the body politic; the position of agriculture; independence of agriculture; State intervention; legislation; tariff; bounties; taxation; insurance; credit; rewards; census; moral and social aspects of agriculture; division and distribution of farms; size of farms; extensive and intensive farming; ownership of land; inheritance; nationalization of land; government-lands; colonization; agricultural laborers, machinery, experimentation; education; association; coöperation; press; agricultural improvement; reclamation and irrigation of land; diversification of products; *Winter term, Senior year; lectures, 2 exercises per week. Elective. Open to students who have taken Agriculture VIII.*

XIII. Agricultural and horticultural literature.—An opportunity to read and study in any special line of agriculture or horticulture for which the student is prepared. Examination and consideration of the reports and bulletins of the agricultural ex-

periment stations. *Winter term, Senior year ; 2 exercises per week. Elective by special arrangement.*

XIV. Farm Management.—Introductions and definitions ; farming requisites ; farm production and market relations ; capital, permanent, floating and perishable ; distribution in land, buildings, apparatus, live stock and supplies ; labor and power ; machinery ; kind of farming ; size of farm ; system of farming ; ownership or rental of farm ; maintenance and management ; returns and results ; inventory and balancing of accounts. *Spring term, Senior year ; 5 exercises per week. Elective.*

XV. Farm Accounts and Records.—The principles and methods of book-keeping in their application to the keeping of farm accounts ; diary ; note-book ; calendar ; records and accounts of special departments, crops, fields and animals ; calculations, estimates and valuations ; inventories. *Spring term, Senior year ; lectures, 1 exercise per week. Elective.*

XVI. Farm Law.—The legal rights and liabilities of farmers ; purchase and sale of farm, forms of deeds ; rental of farm, terms of lease ; boundaries and fences ; overhanging trees ; water rights and drainage ; ways over the farm ; rights in the highway ; roadsides ; live stock ; dogs ; game ; trespass ; theft ; fires ; insurance ; employing laborers ; liability of employer and employed ; contracts ; mortgages ; notes ; taxes ; exchange, sale and purchase ; contagious diseases of live stock and crops. *Spring term, Senior year ; lectures, 1 exercise per week. Elective by special arrangement.*

XVII. Apiculture.—A study of the habits, care, breeding and management of the honey-bee, with practical work in the apiary. *Spring term, Senior year ; lectures, 1 exercise per week. Elective.*

XVIII. Agricultural Debate.—Discussion in the form of regular parliamentary debates upon leading agricultural questions. *Spring term, Senior year ; 1 exercise per week. Elective.*

XIX. Agricultural Experimentation.—A study of the objects,

principles and methods of agricultural experimentation. Opportunity will be given for practical participation in the work of the Experiment Station to those students who arrange to continue this work through the experimental season. *Spring term, Senior year; lectures and object lessons, 2 exercises per week. Elective by special arrangement.*

## HORTICULTURE.

I. Field and Garden Crops.—Balancing of farm; rotation of crops; grass-land; wood-land; tillage-land; preparation of land, planting, cultivating, harvesting, storing and disposal of crops; special consideration of the hay crop, fodder crops, Indian corn, potatoes, root crops, field and garden vegetables; weeds. *Fall term, Junior year; lectures, 3 exercises per week. Required of Agricultural students.*

II. Market-gardening and Greenhouse Culture.—Location, soil, preparation and equipment; construction, maintenance and management of hot-beds, cold frames, forcing pits and greenhouses; market-garden and greenhouse crops. *Winter term, Junior year; lectures and reference books, 3 exercises per week. Required of Agricultural students.*

III. Plant Breeding.—Propagation of plants; seed-growing; heredity; individuality; characteristics; variation; origin and improvement of varieties; selection; culture; close breeding; cross-breeding; pollination natural and artificial; special breeding of potato, maize, beet, cucumber, squash, strawberry, raspberry, etc. *Winter term, Junior year; lectures, 1 exercise per week. Elective.*

IV. Forestry.—Relation to climate, shelter, water-shed and timber production; trees as a farm crop; nut-bearing trees; planting, care and management of forest trees; cutting and curing; wind-breaks, groves and shelter belts; forest fires; diseases and

enemies of forest trees; arbor day. *Winter term, Junior year; lectures, 2 exercises per week. Elective.*

V. Pomology (Maynard).—Culture of orchard, vineyard and garden fruits; special culture of the apple, pear, peach, plum, cherry, quince, grape, currant, gooseberry, raspberry, blackberry and strawberry; harvesting, preparation, preservation and marketing of fruit; evaporators; cold storage; special study of propagation of fruits, grafting, budding, layering, etc.; spraying. *Spring term, Junior year; lectures and text-book, 3 exercises per week. Required of Agricultural students.*

VI. Ornamental Gardening (Long).—Requirements of ornamental gardening; materials; arrangement; construction and maintenance of ornamental gardens; improving the surroundings of rural homes; the planting of trees and shrubbery; lawns; village improvement. *Spring term, Junior year; lectures and text-book, 3 exercises per week, for one half term. Required of Agricultural students.*

VII. Floriculture.—House plants, selection, care and arrangement; conservatories; commercial floriculture; garden, field and greenhouse culture of flowering plants; bulb culture. *Spring term, Junior year; lectures and text-book, 3 exercises per week, for one half term. Required of Agricultural students.*

## AGRICULTURAL COLLEGE EXTENSION.

FOR the benefit of persons within the state who cannot attend the College as students, the faculty has arranged a course of study, known as the Agricultural College Extension. The plan, which is similar to that of the Chautauqua Reading Circle, provides a course of study embodying lines in agriculture and horticulture as well as studies in literature and the sciences.

The course of study is designed to meet the requirements of anyone who may choose to pursue it. To complete the course, a satisfactory examination on at least one book under each number of the three years' course, given below, must be passed.

Candidates upon completing the course will receive the award of a diploma.

### COURSE OF STUDY.

FIRST YEAR.		Publisher's Price.	Price to Members of the Extension.	Postage.
1.	First Principles of Agriculture. <i>Voorhees</i> . . . . .	\$ 72	\$ 72	\$ 08
	American Literature. <i>Hawthorne and Lemmon</i> . . . . .		1 12	10
2.	*Home Floriculture. <i>Rexford</i> . . . . .	1 50	1 20	08
	Silos, Ensilage, and Silage. <i>Miles</i> . . . . .	50	38	04
	*Helps for Home Makers. <i>Mary Blake</i> . . . . .	75	56	08
3.	Insects and Insecticides. <i>Weed</i> . . . . .	1 25	1 00	08
	The Human Body (Briefer Course). <i>Martin</i> . . . . .		1 20	10
4.	Feeding Animals. <i>Stewart</i> . . . . .	2 00	1 60	12
	American History. <i>Montgomery</i> . . . . .		1 00	11
5.	Manual of the Constitution. <i>Andrews</i> . . . . .		1 00	08

SECOND YEAR.

	Publisher's Price.	Price to Members of the Extension.	Postage.
1.	{ Soils and Crops. <i>Morrow and Hunt</i> . . . . . \$1 00	\$ 75	\$ 06
	{ Representative English Literature. <i>Pancoast</i> . . . . .	1 60	12
2.	{ Text-Book of Botany . . . . .		
	{ Horses, Cattle, Sheep and Swine. <i>Curtis</i> . . . . . 2 00	1 60	12
	{ *Ornamental Gardening for Americans. <i>Long</i> . . . . . 2 00	1 50	08
3.	{ How the Farm Pays. <i>Henderson and Crozier</i> . . . . . 2 50	1 88	12
	{ How to Make the Garden Pay. <i>Greiner</i> . . . . . 2 00	1 60	12
	{ Profitable Poultry Keeping. <i>Beale</i> . . . . . 1 50	1 12	08
	{ *Anna Maria's Housekeeping. <i>Powder</i> . . . . . 75	56	08
4.	{ Stock Breeding. <i>Miles</i> . . . . . 1 50	1 12	12
	{ English History. <i>Montgomery</i> . . . . .	1 12	11
5.	{ Political Economy (Briefer Course). <i>Walker</i> . . . . .	1 00	08
	{ Astronomy. <i>Newcomb</i> . . . . .	1 30	12

THIRD YEAR.

1.	{ Practical Farm Chemistry. <i>Greiner</i> . . . . . \$1 00	\$ 80	\$ 06
	{ General History. <i>Meyers</i> . . . . .	1 50	15
2.	{ A Text-Book of Chemistry . . . . .		
	{ The Nursery Book. <i>Bailey</i> . . . . . 1 00	80	06
	{ Draining for Profit and Health. <i>Waring</i> . . . . . 1 50	1 12	08
3.	{ Langstroth on the Hive and Honey Bee. (Dadant's Revision). . . . .	1 12	08
	{ American Fruit Culturist. <i>Thomas</i> . . . . . 2 50	2 00	22
	{ American Dairying. <i>Gurler</i> . . . . . 1 00	80	06
	{ Green-House Construction. <i>Taft</i> . . . . . 1 50	1 20	08
	{ Horse Breeding. <i>Sanders</i> . . . . . 2 00	1 50	12
4.	{ *Our Farming. <i>Terry</i> . . . . . 2 00	1 60	13
	{ English translations from a foreign literature. (Books will be recommended later according to the subject chosen.)		
5.	{ *The New Womanhood. <i>Fernald</i> . . . . . 1 25	94	08
	{ Advanced Course in Political Economy. <i>Walker</i> . . . . .	2 00	15
	{ Soils and Rocks. <i>Stockbridge</i> . . . . . 2 50	2 25	12

## SUPPLEMENTARY READING.

Below is a list of books which the faculty recommends as reading supplementary to the above course; the same is suggested as a desirable list of books for the home, grange or town library.

	Publisher's Price.	Price to Members.	Pos- tage.
Agriculture (3 vols.) <i>Storer</i> .....	\$5 00	\$5 00	\$ 36
Talks on Manures. <i>Harris</i> .....	1 75	1 31	08
Practical Dairy Husbandry. <i>Willard</i> .....	3 00	2 00	16
The Grasses of North America. (Vol. I.) <i>Beal</i> .....	2 50	2 25	10
“ “ “ (Vol. II.) <i>Beal</i> ....	5 00	4 50	29
Turkeys and how to Raise Them. <i>Myrick</i> .....	1 00	75	07
The Spraying of Plants. <i>Lodeman</i> .....	1 00	80	07
Plant Breeding. <i>Bailey</i> .....	1 00	80	07
Soils. <i>King</i> .....	75	60	05
Manures, How to Make and How to Use Them. <i>Burpee</i> .	50	38	08
The Earth and its Story. <i>Heilprin</i> .....	1 00	1 00	08
Fungi and Fungicides. <i>Weed</i> .....	1 00	75	07
Survival of Unlike. <i>Bailey</i> .....	2 00	1 60	10
Horticultural Rule Book. <i>Bailey</i> .....	75	60	06
Rural Grape Training. <i>Bailey</i> .....	75	65	04
Vegetable Gardening. <i>Greene</i> .....			
The Farmer's Veterinary Adviser. <i>Law</i> .....	3 00	2 40	16
Plant Life on the Farm. <i>Masters</i> .....	1 00	75	06
The Shepherd's Manual. <i>Stewart</i> .....	1 50	1 12	11
Harris on the Pig. <i>Harris</i> .....	1 50	1 12	08
Practical Poultry Keeping. <i>Wright</i> .....	2 00	1 50	12
The Book of Poultry. <i>Wright</i> . } .....	5 09	3 75	24
Colored Plates. } .....	12 50	9 38	32
How Crops Feed. <i>Johnson</i> .....	1 50	1 12	11
How Crops Grow. <i>Johnson</i> .....	1 50	1 12	11
A B C of Bee Culture. <i>Root</i> .....	1 25	1 00	12
A Modern Bee Farm. <i>Simmins</i> .....			
Bees and Bee-Keeping. (2 vols.) <i>Cheshire</i> ..			
The Production of Comb Honey. <i>Hutchinson</i> .....		25	
The Production of Extracted Honey. <i>Cowan</i> ..			
The Incubator and its use. <i>Rankin</i> .....			
Poultry for Profit. <i>Jacobs</i> .....			

	Publisher's Price.	Price to Members.	Pos- tage.
Incubators and Brooders. <i>Jacobs</i> .....			
Natural and Artificial Duck Raising. <i>Rankin</i> .....			
Poultry. (A Treatise on raising Broilers and Ducks by Artificial Means.) <i>McFetridge</i> .....			
Hand-book of Plants. <i>Henderson</i> .....	\$4 00	3 20	28
Flowers, Fruits, and Leaves. <i>Sir John Lubbock</i> .....			
How to Know the Wild Flowers. <i>Dana</i> .....		1 50	Free
Origin of Species. <i>Darwin</i> .....	2 00	1 50	14
Animals and Plants under Domestication. (2 vols.) <i>Darwin</i> .....	5 00	3 75	28
The American Commonwealth. <i>Bryce</i> .....		3 50	Free
Letters to a Daughter. <i>Starrett</i> .....	75	60	06
How the Other Half Lives. <i>Riis</i> .....		1 25	06
Amenities of Home.....	60	45	05
How to Win. <i>Frances E. Willard</i> .....	1 00	75	07
New England Legends and Folk Lore. <i>Drake</i> .....	2 00	1 50	12
A Nameless Nobleman. <i>Jane Austin</i> .....	1 25	94	08
Dr. LeBaron and his Daughter. <i>Jane Austin</i> .....	1 25	94	08
Standish of Standish. <i>Jane Austin</i> .....	1 25	94	08
Betty Alden. <i>Jane Austin</i> .....	1 25	94	08
Half Hours with American History. (2 vols.) <i>Morris</i> .	3 00	2 25	24
Masterpieces of American Literature.....		1 00	08
Riverside Literature Series.....		15	Free
A Short History of the English People. <i>Green</i> .....		1 20	15
Student's History of England. <i>Gardiner</i> .....		3 00	15
Readings from English History. <i>J. R. Green</i> .....	1 50	1 12	12
English Classic Series .....		12	Free
Public Opinion (Periodical).....			

Any of the above books may be bought of The Rhode Island News Company, 113 and 115 Westminster Street, Providence, by members of the Extension Course, at the special price given.

Further information regarding the course may be obtained by consulting Part I. of the 1896 report or by writing to the address below.

J. D. TOWAR,  
Sec. Agr. College Extension,  
Kingston, R. I.



## MILITARY ORGANIZATION.

### COMMANDANT,

W. W. WOTHERSPOON, Captain Twelfth Infantry, U. S. A.

### COMPANY A.

H. E. B. CASE, Captain.

W. C. P. MERRILL.....	First Lieutenant.
W. J. TAYLOR.....	First Sergeant.
W. F. HARLEY.....	Sergeant.
H. P. WILSON.....	Sergeant.
A. P. KENYON.....	Sergeant.
A. F. GRINNELL.....	Sergeant.
S. W. WRIGHT.....	Corporal.
G. ROSE.....	Corporal.
H. A. CONGDON.....	Corporal.
B. E. KENYON.....	Corporal.

### COMPANY B.

L. H. MARSLAND, Captain.

A. A. TUCKER.....	Second Lieutenant.
W. C. CLARKE, JR.....	First Sergeant.
R. B. STROUT.....	Sergeant.
I. THOMAS.....	Sergeant.
M. A. LADD.....	Sergeant.
W. S. Carmichael.....	Sergeant.
E. A. BATES.....	Corporal.
C. F. KENYON.....	Corporal.
W. L. W. CLARKE.....	Corporal.
F. R. EDDY.....	Corporal.
Battalion Adjutant.....	Lieut. A. A. TUCKER.
Bugler.....	H. W. CASE.

## BOTANICAL CLUB.

IN CHARGE OF THE PROFESSOR OF BOTANY.

---

Those interested in botanical subjects meet occasionally to discuss simple botanical literature, especially the bulletins of the Experiment Stations and of the U. S. Government.

---

## ZOÖLOGICAL CLUB.

The Zoölogical Club meets bi-weekly for the study of the local fauna, for the presentation of brief papers, and for the review of current journals. A special room is devoted to the collections and preparations made by the club. The daily observations by the members upon the occurrence, habitat, structure, life history and habits of the animals, are on file for ready reference. Special excursions are made to favorable localities. Opportunities for field work in zoölogy are remarkably fine.

### OFFICERS.

HENRY F. O'NEIL .....	President.
HARRIETTE F. TURNER.....	Vice President.
HARRY KNOWLES.....	Secretary.
E. PAYNE.....	Curator.

## CHEMICAL CLUB.

---

The Chemical Club meets once in two weeks for the purpose of discussing the literature upon chemical, physical, and agricultural subjects. The French, German, and English journals are distributed among the members and reports are received from time to time on subject matter from thirty-five different journals.

### OFFICERS.

CHARLES F. KENYON.....President.  
 HARRY W. ARNOLD.....Vice President.  
 WILLIAM J. TAYLOR.....Secretary.

---

## YOUNG MEN'S CHRISTIAN ASSOCIATION.

---

M. A. LADD.....President.  
 W. F. HARLEY.....Vice President.  
 W. E. DRAKE.....Cor. Secretary.  
 W. P. ALEXANDER.. . . . .Rec. Secretary.  
 E. A. BATES.....Treasurer.

---

## ALUMNI ASSOCIATION.

---

GEORGE M. TUCKER, President.

GEORGE A. RODMAN, Secretary,      CHARLES L. SARGENT, Treasurer,  
 Woonsocket, R. I.                      Peacedale, R. I.

## STUDENTS.

---

### POST GRADUATES.

Adams, George Edward.....	Rocky Brook,	R. I.
Burdick, Howland .....	Newport,	“
Clarke, Charles Sherman .....	Jamestown,	“
Eldred, Mabel DeWitt.....	Kingston,	“
Greenman, Adelaide Maria .....	Kingston,	“
Knowles, John Franklin.....	Kingston,	“
Madison, Warren Brown.....	East Greenwich,	“
Scott, Arthur Curtis.....	Summit,	“
Tucker, George Mason.....	Swansea Centre,	Mass.

### GRADUATES OF 1896.

Brown, May.....	Narragansett Pier,	R. I.
Greenman, Adelaide Maria .....	Kingston,	“
Kenyon, Albert Lewis, Mech.....	Point Judith,	“
Moore, Nathan Lewis Cass, Agr.....	Shannock,	“
Tabor, Edgar Francis, Mech.....	Slatersville,	“
Williams, James Emerson, Agr.....	Summit,	“

### SENIORS.

Carmichael, Welcome Sands, Sci.....	Shannock,	R. I.
Case, Herbert Edwards Brown, Mech.....	Pawtucket,	“
Grinnell, Archie Franklin, Mech.....	Middletown,	“
Hanson, Gertrude Maie, Sci.....	Peace Dale,	“
Hoxsie, Bessie Bailey, Sci.....	Quonochontaug,	“

Larkin, Jessie Louise, Sci.....	Westerly,	R. I.
Kenyon, Charles Franklin, Mech.....	Shannock,	"
Kenyon, Albert Prentice, Mech.....	Ashaway,	"
Marsland, Louis Herbert, Mech.....	Franklin,	N. Y.
Tefft, Eliza Alice, Sci.....	Allenton,	R. I.
Thomas, Irving, Mech.....	Lafayette,	"

### JUNIORS.

Arnold, Sarah Estelle, Sci.....	Wakefield,	R. I.
Barber, George Washington, Agr.....	Shannock,	"
Case, John P., Agr.....	Gould,	"
Clarke, William Case, Sci.....	Wakefield,	"
Clarke, William Lamont Wheeler, Mech..	Jamestown,	"
Congdon, Henry Augustus, Mech.....	Kingston,	"
Cargill, Edna Maria, Sci.....	Abbott Run,	"
Flagg, Martha Rebecca, Sci.....	Kingston,	"
Harley, William Ferguson, Agr.....	Pawtucket,	"
Rose, George Tucker, Agr.....	Kingston,	"
Strout, Robert Bruce, Agr.....	Wakefield,	"
Taylor, William James, Sci.....	Mendon,	Mass.
Tucker, Attmore Arnold, Agr.....	Wakefield,	R. I.
Wilson, Grace Ellen, Sci.....	Allenton,	"
Wright, Silas Wilber, Agr.....	Wakefield,	"

### SOPHOMORES.

Allen, Nathaniel Bertram, Agr.....	Pawtuxet,	R. I.
Arnold, Henry Francis Walling, Mech....	Woonsocket,	"
Arnold, Everett Mullen, Sci.....	Wood River Junc.,	"
Bachelor, William Stanhope, Mech.....	Newport,	"
Barber, Arthur Sisson.....	Hope Valley,	"
Brightman, Henry Mason, Mech.....	White Rock,	"
Cargill, James Edward, Mech.....	Abbott Run,	"
Cumming, John Stuart, Mech.....	Pawtucket,	"
Doughty, Robert Stanley, Mech.....	Providence,	"

Gray, Herman James.....	Adamsville,	R. I.
Harvey, Mildred Wayne, Sci.....	Allenton,	"
Kenyon, Blydon Ellery, Agr.....	Wood River June.,	"
Knowles, Carroll, Mech.....	Kingston,	"
Knowles, Harry, Agr.....	Point Judith,	"
Ladd, Merrill Augustus, Mech.....	Bay Shore, Long Island,	N. Y.
Owens, William Frazier, Mech.....	Cannonsville,	"
Palmer, Walter T.....	Adamsville,	R. I.
Payne, Ebenezer, Sci.....	Lyons Farms,	N. J.
Phillips, Walter Clark, Mech.....	Lafayette,	R. I.
Pierce, Nellie Hollis, Sci.....	Malden,	Mass.
Reynolds, Robert Spink, Mech.....	Wickford,	R. I.
Rice, Minnie Elizabeth, Sci.....	Wickford,	"
Sherman, George Albert, Mech.....	West Kingston,	"

## FRESHMEN.

Eldred, John Raleigh.....	Kingston,	R. I.
Fry, John James.....	East Greenwich,	"
James, Sarah Lila.....	Kenyon,	"
James, Ruth Hortense.....	Kenyon,	"
Jollie, Charles Andrew.....	Providence,	"
Kenyon, Amos Langworthy.....	Wood River June.,	"
Knowles, Alston Windfield.....	Point Judith,	"
Knowles, Leroy Weston.....	Point Judith,	"
Lanphear, Elisha Frederic.....	Peace Dale,	"
Munro, Arthur Earle.....	Quonochontaug,	"
Northup, Abby Fidelia.....	Wickford,	"
Pearson, Alfred, Jr.....	Newburyport,	Mass.
Sherman, Oscar Dean.....	Wickford,	R. I.
Sherman, Robert Joseph.....	Usquepaug,	"
Sisson, Borden Lawton.....	South Portsmouth,	"
Soule, George Canning, Jr.....	Wickford,	"
Soule, Ralph Nelson.....	Wickford,	"
Steere, Anthony Enoch.....	Chepachet,	"

Stillman, Lenora Estelle.....	Kenyon,	R. I.
Tucker, Bertha Douglas.....	Swansea Centre,	Mass.
Wells, Herbert Comstock.....	Kingston,	R. I.
Wightman, Levi Eugene.....	South Scituate,	"
Whitman, Chester Wilson.....	Arctic,	"
Wilson, James Robert.....	Belleville,	"

## SPECIALS.

Angell, Ralph Day.....	Providence,	R. I.
Baldwin, Margaret.....	Aspen Wall,	Va.
Barton, Benjamin.....	East Greenwich,	R. I.
Batchelder, Nelson A.....	Crompton,	"
Bates, Edward Ayer.....	Pawtucket,	"
Bosworth, Alfred Wilson.....	Boston,	Mass.
Brayton, Charles Andrew.....	Fiskeville,	R. I.
Carpenter, Benjamin.....	Perryville,	"
Case, Harold Warren.....	Pawtucket,	"
Clarke, John Gideon.....	West Kingston,	"
Clarke, William Hazard.....	West Kingston,	"
Clarke, Latham.....	West Kingston,	"
Conant, Walter Aiken.....	Wellesley Hills,	Mass.
Cross, Morton Robinson.....	Wakefield,	R. I.
Cullen, Edmund Daniel.....	East Greenwich,	"
Eddy, Frank Roffee.....	Providence,	"
Emmet, James R.....	Peace Dale,	"
Fiske, Nina Viola.....	Providence,	"
Fison, Gertrude Sarah.....	Peace Dale,	"
Greene, Prescott Morrill.....	Peace Dale,	"
Hammond, Thomas Cook.....	Newport,	"
Merrill, William Chauncy Palmer.....	Central Falls,	"
Minor, George Eldred.....	Westerly,	"
Morrison, Clifford Brewster.....	Pawtucket,	"
Nash, Clarence Earl.....	Watch Hill,	"
O'Neil, Henry Francis.....	Providence,	"

Parkhurst, Elizabeth M.....	Wickford,	R. I.
Peckham, Herbert James.....	Middletown,	"
Peckham, Arthur Noyes.....	Kingston,	"
Reynolds, Rebecca Dean.....	East Greenwich,	"
Rose, John E.....	Kingston,	"
Sherman, Abbie Gertrude.....	Kingston,	"
Sisson, Marion Sumner.....	South Portsmouth,	"
Steere, John Purkis.....	Chepachet,	"
Steere, Enoch Mowry.....	Chepachet,	"
Steere, Roena Hoxsie.....	Wood River Junc.,	"
Thompson, Sally Rodman.....	Wakefield,	"
Turner, Harriette Florence.....	Ontario Centre,	N. Y.
Wells, Grace Perry.....	Kingston,	R. I.
Wilson, Harry Page.....	Allenton,	"
Woodmansee, Mattie Florence.....	Shannock,	"

## SPECIALS IN WOOD-CARVING.

Mrs. Charles Auel.....	Shannock,	R. I.
Mrs. Charles Armstrong.....	Wakefield,	"
Mrs. Ellen Bosworth.....	Kingston,	"
Miss Mary J. Brown.....	Kingston,	"
Mrs. George Carmichael.....	Shannock,	"
Mrs. George Clark.....	Shannock,	"
Miss Julia Clarke.....	Shannock,	"
Mrs. Oscar E. Earnshaw.....	Kenyon,	"
Mrs. A. A. Greenman.....	Kingston,	"
Mrs. F. D. Johnson.....	Wakefield,	"
Miss Mary E. Kenyon.....	Kingston,	"
Mrs. George Kroener.....	Wakefield,	"
Miss May J. Lanphear.....	Peace Dale,	"
Mrs. Carrie Palmer.....	Wakefield,	"
Miss A. E. Rodman.....	Peace Dale,	"
Miss Mary E. Wright.....	Shannock,	"



Post Graduates.....	9
Graduates of 1896.....	6
Seniors.....	11
Juniors.....	15
Sophomores.....	23
Freshmen.....	24
Specials.....	41
Specials in Wood-carving.....	16
<hr/>	
Total, counting none twice.....	145
Students in College Extension courses.....	32

## TREASURER'S REPORT.

---

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND COLLEGE OF  
AGRICULTURE AND MECHANIC ARTS

1896.

DR.

Jan. 1.	To cash balance on hand. ....	\$4 27
	Interest from 1862 fund .....	1,918 89
	J. H. Washburn, President, for students' board, etc....	11,606 00
	Incidental credits, cash.....	681 63
	Cash received from interest.....	8 13
		\$14,218 92

1896.

CR.

By salaries. . . . .	\$2,256 24	\$2,256 24
Postage, stationery and printing.....	61 74	
Freight and expressage .....	495 14	
Traveling .....	54 23	
Labor.....	2,709 85	
Store.....	1,703 72	
Furniture .....	343 24	
Incidentals.....	2,650 21	
Construction and repairs.....	1,296 01	
Provisions.....	1,876 03	
Boarding expenses.....	643 31	
Cash on hand.....	129 20	
		\$14,218 92

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, as above, and find the same to be correct, leaving a balance in the said Treasurer's hands of one hundred and twenty-nine dollars and twenty cents.

GARDINER C. SIMS,  
HENRY L. GREENE,  
CHAS. J. GREENE,

*Auditing Committee.*

THE RHODE ISLAND AGRICULTURAL EXPERIMENT STATION *in account with the*  
UNITED STATES' APPROPRIATION.

1896.

DR.

To receipts from the Treasurer of the United States as per appropriation for the year ending June 30, 1896, under act of Congress approved March 2, 1887 . . . . . \$15,000 00

1896.

CR.

June 30. By Salaries . . . . .	\$8,469 27	
Labor . . . . .	1,713 68	
Publications . . . . .	1,969 34	
Postage and stationery . . . . .	104 42	
Freight and expressage . . . . .	118 78	
Heat, light, and water . . . . .	99 18	
Chemical supplies . . . . .	38 88	
Seeds, plants, and sundry supplies . . . . .	548 56	
Fertilizers . . . . .	353 26	
Feeding stuffs . . . . .	26 34	
Library . . . . .	285 70	
Tools, implements, and machinery . . . . .	242 91	
Furniture and fixtures . . . . .	85 52	
Scientific apparatus . . . . .	7 25	
Live stock . . . . .	363 00	
Traveling . . . . .	334 56	
Contingent expenses . . . . .	25 79	
Building and repairs . . . . .	213 56	
		----- \$15,000 00

WE, the undersigned, duly appointed Auditors of the Corporation, do hereby certify that we have examined the books and accounts of the Rhode Island Experiment Station for the fiscal year ending June 30th, 1896; that we have found the same well kept and classified as above and that the receipts for the year from the Treasurer of the United States are shown to have been fifteen thousand dollars, and the corresponding disbursements fifteen thousand dollars; for all of which proper vouchers are on file and have been by us examined and found correct.

And we further certify that the expenditures have been solely for the purpose set forth in the act of Congress approved March 2, 1887.

Signed,

GARDINER C. SIMS,  
HENRY L. GREENE,  
CHAS. J. GREENE,

*Auditors.*

PROVIDENCE, R. I., July 15, 1896.

I hereby certify that the above is a true copy from the books of account of the institution named.

MELVILLE BULL,

*Treasurer of the Rhode College of Agriculture and Mechanic Arts.*

I hereby certify that the above signature is that of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts.

C. H. COGGESHALL,

*President of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts.*

---

MELVILLE BULL, *Treasurer, in account with the* RHODE ISLAND AGRICULTURAL  
EXPERIMENT STATION.

1896.	DR.	
June 30.	To balance from last year.....	\$1,021 63
	Station receipts.....	1,296 04
	Station receipts, fertilizer inspection.....	2,676 84
	Interest.....	73 17
		<hr/>
		\$5,067 68

1896	CR.	
By Salaries .....		\$402 30
Labor.....		846 13
Supplies and repairs..		865 49
Freight and expressage, postage and stationery.....		75 70
Library and printing.....		272 46
Tools and machinery.....		19 72
Scientific instruments.....		150 43
Chemical apparatus and supplies..		31 66
Furniture and general fittings.....		87 68
Roads, water supply, and drainage .		13 93
Live stock. ....		142 88
Traveling .....		65 21
Incidentals .....		37 60
Buildings .....		63 02
Fertilizer control .....		839 27
Balance on hand. ....		1,154 20
		<hr/>
		\$5,067 68

MELVILLE BULL, *Treasurer, in account with* UNITED STATES' SPECIAL APPROPRIATION.

1896.	DR.	
June 30. To balance on hand . . . . .		\$1,274 50
Interest .....		51 46
		<hr/>
		\$1,325 96
	CR.	
By Library .....		\$169 56
Scientific apparatus.....		63 06
Balance unexpended . . . . .		1,093 34
		<hr/>
		\$1,325 96

THIS IS TO CERTIFY that the undersigned, Auditing Committee of the Board of Managers of the Rhode Island College of Agriculture and Mechanic Arts, have examined the accounts of Melville Bull, Treasurer, ending June 30, 1896, and the vouchers corresponding therewith and find the same to be correct.

GARDINER C. SIMS,  
HENRY L. GREENE,  
CHAS. J. GREENE,

*Auditors.*

*Synopsis of the Report of the Treasurer of the Rhode Island College of Agriculture and Mechanic Arts to the Secretary of Agriculture and the Secretary of the Interior, of amount received under Act of Congress of August 30, 1890, in aid of Colleges of Agriculture and the Mechanic Arts, and of the disbursements thereof, to and including June 30, 1896.*

Balance on hand July 1, 1895 .....	\$40,670 42
Installment for 1895-'96, received July 10, 1895.....	21,000 00
	<hr/>
Total available for year ending June 30, 1896.....	\$61,670 42

## DISBURSEMENTS THEREOF FOR AND DURING THE YEAR ENDING JUNE 30, 1896.

SCHEDULE A.—Disbursements for Instruction in Agriculture and for facilities for such instruction .....	\$6,024 11
SCHEDULE B.—Disbursements for Instruction in Mechanic Arts and for facilities for such instruction.....	8,757 21
SCHEDULE C.—Disbursements for Instruction in English Language and for facilities for such instruction .....	2,372 73
SCHEDULE D.—Disbursements for Instruction in Mathematical Science and for facilities for such instruction.....	1,452 47
SCHEDULE E.—Disbursements for Instruction in Natural or Physical Science and for facilities for such instruction .....	10,169 93
SCHEDULE F.—Disbursements for Instruction in Economic Science and for facilities for such instruction.....	666 68
	<hr/>
Total expended during the year .....	\$29,443 13
Balance remaining unexpended .....	32,227 29
	<hr/>
	\$61,670 42

I HEREBY CERTIFY that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named; and that said expenditures

were applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction.

MELVILLE BULL, *Treasurer.*

INVENTORY OF THE PROPERTY OF THE RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Property of the Department of Agriculture and Horticulture.....	\$9,360 11
Property of the Department of Mechanic Arts.....	13,689 94
Property of the Department of English and History.....	4,834 14
Property of the Department of Mathematics.....	1,579 97
Property of the Department of Natural Sciences.....	17,286 12
Property of the Department of Political Science.....	248 28
Property of the Boarding Department.....	2,205 80
Property of the Women's Dormitory.....	1,100 00
Guns, cannon, and other military equipment.....	4,641 00
Furniture in offices and schoolrooms.....	1,216 00
Scientific apparatus, tools, and machinery of the Experiment Station.....	4,832 25
Books of the Experiment Station.....	2,871 35
Other property of the Experiment Station.....	5,471 61
	<hr/>
Amount of personal property.....	\$69,336 57
Women's Dormitory.....	\$2,500 00
Hothouse.....	200 00
Mechanical Building.....	10,000 00
Blacksmith Shop.....	400 00
Temporary wooden buildings.....	4,000 00
Boarding Hall.....	10,000 00
Dormitory.....	45,000 00
Water Supply.....	10,000 00
Experiment Station Laboratory.....	20,000 00
Barns.....	5,000 00
Farm, roads, and improvements.....	15,000 00
	<hr/>
Amount of real estate.....	\$122,100 00
Total amount of real estate and personal property.....	\$191,436 57



GENERAL VIEW.